

Our Ref: 18994C/HA



ALLAWAY ACOUSTICS  
LIMITED

Client: University College London

**Project: 66-67 Gower Street, London W1**

**Proposal for Air Conditioning – Basement Seminar Room  
Environmental Acoustic Report**

RECEIVED  
- 9 FEB 2007

Date of Survey: 26<sup>th</sup>-27<sup>th</sup> July 2006

Prepared By: Chris Williams BSc (Hons) MIOA

ACOUSTIC REPORT REF: A1



ALLAWAY ACOUSTICS  
LIMITED

## **66-72 Gower Street, W1 Existing Environmental Noise Levels**

### **1. Introduction**

- 1.1 Prior to the installation of new building services plant at this site, we have carried out an environmental noise survey to establish the existing minimum background noise levels.
- 1.2 This report describes the survey and details the results obtained.
- 1.3 On the basis of the survey results, a target noise level will be determined for the proposed future plant.

### **2. Site Description**

- 2.1 The site is located at 66-67 Gower Street, W1 which is on the west side of Tottenham Court Road.
- 2.2 Two Daikin Type RZQ125B air conditioning units and a supply air intake louvre are to be located in a basement level courtyard to the rear of the building.
- 2.3 The area is entirely commercial and there were no residential properties observed within the vicinity, although the Local Authority should confirm this.
- 2.4 The nearest affected windows not associated with UCL are approximately 20m from the location of the proposed plant.
- 2.5 The plant will operate during the hours of 8am – 6pm.

### **3. Survey**

- 3.1 The survey was carried out between the hours of 09:20 on Thursday 26<sup>th</sup> July and 10:00 on Friday 27<sup>th</sup> July 2006.



ALLAWAY ACOUSTICS  
LIMITED

- 3.2 The weather during the survey period was warm with no wind. This was deemed not to have any significant effect on the measured noise levels.
- 3.3 Construction noise from an adjacent building site affected the daytime noise levels.
- 3.4 Noise levels were measured for consecutive 20-minute periods in the basement courtyard to the rear of the building.
- 3.5 Of the parameters measured, the LA90 gives the closest representation of the background level, as it is the level exceeded for 90% of the measurement period. The LAEQ is an energy-averaged value, and the LA10 is indicative of traffic noise.
- 3.6 In addition to the A-weighted levels referred to above, representative octave-band spectra were also recorded so that the frequency distribution of the noise could be assessed.

#### **4. Instrumentation**

- 4.1 All measurements were obtained using a Norsonic NOR131 Sound Level Meter (s/n 1312779). This instrument conforms to IEC60651 and type 60804 Type 1 specification and to 61672-1:2002 and 61260 Class 1 specification.
- 4.2 Before commencing the readings, the meter was checked for correct calibration with both the internal reference signal and an acoustic calibrator. The calibration was rechecked after the survey with no change noted.
- 4.3 To minimise environmental effects, the microphone was fitted with a windshield at all times.



ALLAWAY ACOUSTICS  
LIMITED

## **5. Results**

- 5.1 Full details of the results obtained are attached to this Report.
- 5.2 Due to the construction noise, the lowest background noise level shall be determined from the hour before the construction started (7am-8am) and the hour after the construction finished (6pm-7pm).
- 5.2 The minimum background (L90) noise level measured was 44dB(A) between 7am and 8am.

## **6. Discussion**

- 6.1 Each of the air conditioning units has a published sound pressure level of 56dB(A) at 1m (in heating mode).
- 6.2 This equates to a total condenser noise level of 39dB(A) at 20m.
- 6.3 The supply air fan will generate a noise level of 45dB(A) at 1m, which equates to a level of 25dB(A) at 20m.
- 6.4 Plant noise will therefore be 5dB(A) lower than the existing background noise level.

A handwritten signature in black ink, appearing to read 'Chris Williams', written in a cursive style.

**Chris Williams** BSc (Hons) MIOA  
17 January 2007



ALLAWAY ACOUSTICS  
LIMITED

## SCHEDULE OF RESULTS

**Date of Survey: 26<sup>th</sup>-27<sup>th</sup> July 2006**

**RE: 66-72 Gower Street, W1**

Table 1 - L<sub>EQ</sub>

| Time  | 63 Hz | 125 Hz | 250 Hz | 500 Hz | 1.0 k | 2.0 k | 4.0 k | 8.0 k | dB(A) |
|-------|-------|--------|--------|--------|-------|-------|-------|-------|-------|
| 9:20  | 69    | 68     | 69     | 69     | 68    | 66    | 64    | 60    | 73    |
| 9:40  | 68    | 65     | 66     | 66     | 65    | 65    | 64    | 58    | 71    |
| 10:00 | 68    | 64     | 64     | 64     | 62    | 61    | 57    | 48    | 68    |
| 10:20 | 67    | 61     | 60     | 58     | 56    | 54    | 52    | 46    | 62    |
| 10:40 | 69    | 67     | 67     | 67     | 67    | 65    | 62    | 57    | 72    |
| 11:00 | 67    | 67     | 69     | 69     | 68    | 66    | 63    | 58    | 73    |
| 11:20 | 67    | 65     | 67     | 66     | 66    | 64    | 61    | 58    | 71    |
| 11:40 | 67    | 65     | 65     | 64     | 63    | 61    | 57    | 54    | 68    |
| 12:00 | 67    | 65     | 67     | 67     | 65    | 64    | 62    | 59    | 71    |
| 12:20 | 67    | 67     | 68     | 68     | 67    | 67    | 64    | 59    | 73    |
| 12:40 | 67    | 64     | 64     | 64     | 65    | 65    | 63    | 56    | 71    |
| 13:00 | 67    | 66     | 64     | 65     | 65    | 64    | 62    | 57    | 70    |
| 13:20 | 66    | 64     | 64     | 66     | 64    | 65    | 62    | 56    | 70    |
| 13:40 | 67    | 63     | 64     | 64     | 64    | 64    | 61    | 56    | 69    |
| 14:00 | 67    | 63     | 64     | 63     | 63    | 63    | 61    | 57    | 69    |
| 14:20 | 70    | 67     | 68     | 67     | 66    | 65    | 63    | 59    | 72    |
| 14:40 | 70    | 66     | 71     | 67     | 64    | 64    | 64    | 58    | 71    |
| 15:00 | 70    | 66     | 70     | 67     | 65    | 63    | 63    | 58    | 71    |
| 15:20 | 69    | 66     | 70     | 67     | 65    | 63    | 62    | 58    | 71    |
| 15:40 | 71    | 70     | 73     | 68     | 66    | 64    | 63    | 57    | 72    |
| 16:00 | 70    | 66     | 74     | 66     | 62    | 63    | 63    | 56    | 71    |
| 16:20 | 68    | 65     | 65     | 63     | 62    | 59    | 57    | 52    | 67    |
| 16:40 | 58    | 60     | 59     | 59     | 59    | 58    | 57    | 50    | 65    |
| 17:00 | 57    | 58     | 58     | 58     | 61    | 59    | 58    | 52    | 66    |
| 17:20 | 56    | 58     | 58     | 60     | 63    | 61    | 60    | 56    | 68    |
| 17:40 | 55    | 57     | 59     | 60     | 60    | 58    | 57    | 52    | 65    |
| 18:00 | 55    | 56     | 53     | 50     | 46    | 40    | 32    | 21    | 51    |
| 18:20 | 54    | 55     | 52     | 48     | 45    | 39    | 32    | 20    | 50    |
| 18:40 | 55    | 56     | 53     | 50     | 46    | 40    | 33    | 21    | 51    |
| 19:00 | 54    | 55     | 53     | 49     | 46    | 42    | 32    | 21    | 51    |
| 19:20 | 54    | 59     | 55     | 51     | 47    | 41    | 33    | 22    | 53    |
| 19:40 | 54    | 55     | 52     | 48     | 46    | 43    | 33    | 21    | 51    |



ALLAWAY ACOUSTICS  
LIMITED

|       |    |    |    |    |    |    |    |    |    |
|-------|----|----|----|----|----|----|----|----|----|
| 20:00 | 53 | 54 | 51 | 49 | 45 | 38 | 31 | 20 | 50 |
| 20:20 | 53 | 56 | 50 | 47 | 43 | 37 | 31 | 20 | 49 |
| 20:40 | 55 | 55 | 55 | 52 | 48 | 41 | 32 | 19 | 53 |
| 21:00 | 53 | 54 | 50 | 49 | 46 | 38 | 30 | 20 | 51 |
| 21:20 | 52 | 54 | 50 | 50 | 46 | 37 | 30 | 19 | 51 |
| 21:40 | 53 | 53 | 49 | 46 | 42 | 36 | 30 | 20 | 48 |
| 22:00 | 54 | 55 | 51 | 45 | 42 | 36 | 29 | 18 | 48 |
| 22:20 | 52 | 52 | 48 | 45 | 42 | 36 | 30 | 20 | 47 |
| 22:40 | 52 | 52 | 49 | 45 | 42 | 37 | 29 | 19 | 47 |
| 23:00 | 51 | 50 | 47 | 44 | 41 | 36 | 30 | 20 | 46 |
| 23:20 | 52 | 51 | 47 | 44 | 42 | 38 | 30 | 20 | 47 |
| 23:40 | 51 | 51 | 48 | 44 | 41 | 36 | 30 | 21 | 46 |
| 0:00  | 51 | 50 | 47 | 45 | 44 | 36 | 30 | 20 | 47 |
| 0:20  | 51 | 52 | 49 | 45 | 41 | 36 | 29 | 19 | 46 |
| 0:40  | 49 | 50 | 47 | 44 | 40 | 35 | 29 | 19 | 45 |
| 1:00  | 49 | 50 | 46 | 43 | 40 | 35 | 30 | 21 | 45 |
| 1:20  | 50 | 50 | 47 | 45 | 40 | 36 | 30 | 22 | 46 |
| 1:40  | 49 | 50 | 48 | 44 | 41 | 35 | 29 | 18 | 46 |
| 2:00  | 49 | 50 | 46 | 44 | 39 | 34 | 29 | 21 | 45 |
| 2:20  | 48 | 49 | 46 | 43 | 39 | 34 | 28 | 18 | 44 |
| 2:40  | 49 | 50 | 48 | 44 | 41 | 35 | 30 | 19 | 46 |
| 3:00  | 48 | 50 | 47 | 43 | 40 | 35 | 29 | 19 | 45 |
| 3:20  | 48 | 49 | 46 | 43 | 38 | 34 | 28 | 19 | 44 |
| 3:40  | 48 | 49 | 46 | 43 | 39 | 34 | 29 | 19 | 44 |
| 4:00  | 48 | 50 | 48 | 44 | 41 | 35 | 29 | 19 | 46 |
| 4:20  | 48 | 49 | 46 | 43 | 39 | 35 | 29 | 19 | 45 |
| 4:40  | 48 | 49 | 45 | 42 | 38 | 34 | 28 | 18 | 44 |
| 5:00  | 49 | 49 | 47 | 43 | 39 | 35 | 29 | 19 | 45 |
| 5:20  | 50 | 51 | 48 | 44 | 41 | 36 | 29 | 19 | 46 |
| 5:40  | 50 | 50 | 47 | 44 | 40 | 36 | 31 | 22 | 45 |
| 6:00  | 53 | 53 | 51 | 48 | 44 | 39 | 32 | 20 | 49 |
| 6:20  | 53 | 55 | 52 | 49 | 44 | 38 | 31 | 21 | 50 |
| 6:40  | 54 | 55 | 52 | 50 | 45 | 39 | 30 | 20 | 51 |
| 7:00  | 53 | 52 | 49 | 46 | 41 | 37 | 30 | 20 | 47 |
| 7:20  | 54 | 53 | 49 | 46 | 42 | 37 | 31 | 21 | 48 |
| 7:40  | 54 | 54 | 51 | 49 | 45 | 38 | 31 | 20 | 50 |
| 8:00  | 63 | 64 | 60 | 62 | 63 | 62 | 60 | 57 | 68 |
| 8:20  | 70 | 65 | 65 | 64 | 64 | 64 | 64 | 62 | 71 |
| 8:40  | 70 | 66 | 67 | 66 | 65 | 65 | 66 | 63 | 72 |
| 9:00  | 69 | 62 | 62 | 62 | 62 | 61 | 61 | 57 | 68 |



ALLAWAY ACOUSTICS  
LIMITED

|       |    |    |    |    |    |    |    |    |    |
|-------|----|----|----|----|----|----|----|----|----|
| 9:20  | 68 | 65 | 64 | 63 | 63 | 62 | 62 | 57 | 69 |
| 9:40  | 67 | 66 | 63 | 64 | 64 | 62 | 62 | 56 | 69 |
| 10:00 | 67 | 61 | 58 | 57 | 57 | 56 | 56 | 51 | 63 |

Table 2 – L<sub>10</sub>

| Time  | 63 Hz | 125 Hz | 250 Hz | 500 Hz | 1.0 k | 2.0 k | 4.0 k | 8.0 k | dB(A) |
|-------|-------|--------|--------|--------|-------|-------|-------|-------|-------|
| 9:20  | 70    | 71     | 72     | 72     | 71    | 70    | 69    | 63    | 77    |
| 9:40  | 69    | 67     | 69     | 69     | 69    | 69    | 68    | 61    | 76    |
| 10:00 | 69    | 67     | 68     | 67     | 65    | 65    | 60    | 51    | 71    |
| 10:20 | 68    | 62     | 61     | 61     | 60    | 56    | 53    | 47    | 64    |
| 10:40 | 70    | 70     | 70     | 71     | 70    | 69    | 66    | 61    | 75    |
| 11:00 | 68    | 69     | 71     | 71     | 70    | 69    | 65    | 61    | 75    |
| 11:20 | 68    | 68     | 70     | 69     | 68    | 67    | 63    | 61    | 74    |
| 11:40 | 68    | 68     | 68     | 67     | 66    | 64    | 60    | 59    | 71    |
| 12:00 | 68    | 68     | 69     | 69     | 68    | 67    | 65    | 61    | 74    |
| 12:20 | 68    | 70     | 70     | 70     | 69    | 69    | 68    | 62    | 75    |
| 12:40 | 68    | 67     | 67     | 67     | 68    | 68    | 67    | 60    | 74    |
| 13:00 | 68    | 69     | 67     | 68     | 68    | 68    | 67    | 61    | 74    |
| 13:20 | 67    | 67     | 67     | 68     | 67    | 67    | 64    | 56    | 73    |
| 13:40 | 68    | 66     | 67     | 68     | 66    | 66    | 63    | 58    | 72    |
| 14:00 | 68    | 65     | 67     | 67     | 67    | 66    | 64    | 60    | 73    |
| 14:20 | 72    | 69     | 71     | 69     | 68    | 68    | 68    | 62    | 75    |
| 14:40 | 72    | 68     | 74     | 69     | 67    | 67    | 67    | 61    | 74    |
| 15:00 | 72    | 68     | 74     | 70     | 69    | 66    | 67    | 61    | 74    |
| 15:20 | 72    | 69     | 74     | 71     | 69    | 67    | 67    | 61    | 74    |
| 15:40 | 72    | 70     | 76     | 71     | 68    | 67    | 68    | 62    | 75    |
| 16:00 | 71    | 67     | 78     | 69     | 64    | 67    | 68    | 61    | 75    |
| 16:20 | 68    | 64     | 63     | 62     | 63    | 62    | 59    | 54    | 69    |
| 16:40 | 59    | 62     | 61     | 62     | 64    | 63    | 62    | 54    | 70    |
| 17:00 | 58    | 60     | 57     | 58     | 63    | 62    | 59    | 50    | 69    |
| 17:20 | 57    | 59     | 59     | 60     | 66    | 65    | 66    | 61    | 72    |
| 17:40 | 57    | 59     | 59     | 61     | 63    | 62    | 61    | 58    | 69    |
| 18:00 | 57    | 57     | 54     | 51     | 46    | 41    | 34    | 23    | 52    |
| 18:20 | 56    | 57     | 53     | 49     | 46    | 40    | 34    | 23    | 51    |
| 18:40 | 56    | 57     | 54     | 51     | 46    | 40    | 34    | 23    | 52    |
| 19:00 | 57    | 57     | 54     | 51     | 47    | 41    | 34    | 23    | 52    |
| 19:20 | 56    | 57     | 54     | 52     | 47    | 42    | 35    | 25    | 53    |
| 19:40 | 56    | 56     | 53     | 50     | 46    | 40    | 34    | 23    | 52    |



ALLAWAY ACOUSTICS  
LIMITED

|       |    |    |    |    |    |    |    |    |    |
|-------|----|----|----|----|----|----|----|----|----|
| 20:00 | 56 | 56 | 53 | 49 | 45 | 39 | 33 | 23 | 50 |
| 20:20 | 55 | 56 | 52 | 49 | 44 | 39 | 33 | 22 | 50 |
| 20:40 | 56 | 57 | 55 | 52 | 47 | 40 | 32 | 22 | 53 |
| 21:00 | 55 | 56 | 52 | 49 | 45 | 39 | 33 | 22 | 50 |
| 21:20 | 54 | 55 | 52 | 50 | 45 | 39 | 32 | 22 | 51 |
| 21:40 | 55 | 55 | 52 | 48 | 44 | 38 | 32 | 22 | 50 |
| 22:00 | 56 | 56 | 52 | 48 | 44 | 38 | 32 | 22 | 50 |
| 22:20 | 54 | 54 | 50 | 47 | 43 | 37 | 32 | 22 | 48 |
| 22:40 | 55 | 55 | 51 | 47 | 44 | 38 | 32 | 22 | 49 |
| 23:00 | 53 | 52 | 50 | 46 | 43 | 38 | 32 | 23 | 48 |
| 23:20 | 54 | 53 | 49 | 46 | 43 | 38 | 32 | 23 | 48 |
| 23:40 | 53 | 53 | 50 | 47 | 43 | 38 | 32 | 23 | 48 |
| 0:00  | 53 | 52 | 49 | 47 | 43 | 38 | 32 | 23 | 48 |
| 0:20  | 53 | 54 | 51 | 47 | 43 | 38 | 32 | 22 | 48 |
| 0:40  | 51 | 51 | 49 | 47 | 42 | 37 | 32 | 22 | 47 |
| 1:00  | 51 | 51 | 49 | 46 | 42 | 37 | 32 | 23 | 47 |
| 1:20  | 52 | 52 | 49 | 48 | 42 | 37 | 33 | 25 | 48 |
| 1:40  | 51 | 52 | 50 | 46 | 42 | 37 | 31 | 22 | 48 |
| 2:00  | 51 | 52 | 49 | 47 | 41 | 36 | 32 | 23 | 47 |
| 2:20  | 50 | 51 | 48 | 46 | 41 | 36 | 31 | 22 | 47 |
| 2:40  | 51 | 52 | 50 | 47 | 43 | 37 | 31 | 22 | 48 |
| 3:00  | 50 | 51 | 49 | 46 | 42 | 36 | 31 | 22 | 47 |
| 3:20  | 50 | 51 | 48 | 47 | 40 | 36 | 31 | 22 | 47 |
| 3:40  | 50 | 51 | 48 | 46 | 41 | 36 | 31 | 22 | 47 |
| 4:00  | 50 | 52 | 50 | 47 | 43 | 37 | 32 | 22 | 48 |
| 4:20  | 50 | 51 | 49 | 47 | 41 | 37 | 31 | 22 | 47 |
| 4:40  | 50 | 50 | 48 | 45 | 40 | 36 | 31 | 22 | 46 |
| 5:00  | 51 | 51 | 49 | 46 | 41 | 37 | 31 | 22 | 47 |
| 5:20  | 52 | 53 | 51 | 46 | 43 | 38 | 31 | 22 | 48 |
| 5:40  | 53 | 52 | 49 | 46 | 42 | 38 | 33 | 24 | 48 |
| 6:00  | 55 | 54 | 52 | 49 | 43 | 39 | 32 | 23 | 50 |
| 6:20  | 56 | 56 | 53 | 51 | 46 | 40 | 33 | 23 | 52 |
| 6:40  | 57 | 56 | 54 | 52 | 47 | 40 | 32 | 22 | 53 |
| 7:00  | 56 | 54 | 51 | 48 | 44 | 39 | 32 | 23 | 49 |
| 7:20  | 56 | 55 | 51 | 48 | 44 | 40 | 33 | 23 | 50 |
| 7:40  | 56 | 56 | 53 | 50 | 45 | 40 | 33 | 23 | 52 |
| 8:00  | 67 | 68 | 63 | 65 | 65 | 64 | 65 | 61 | 71 |
| 8:20  | 72 | 67 | 68 | 67 | 67 | 67 | 68 | 68 | 74 |
| 8:40  | 73 | 69 | 70 | 70 | 69 | 68 | 71 | 68 | 76 |
| 9:00  | 72 | 64 | 64 | 64 | 65 | 65 | 64 | 59 | 72 |



ALLAWAY ACOUSTICS  
LIMITED

|       |    |    |    |    |    |    |    |    |    |
|-------|----|----|----|----|----|----|----|----|----|
| 9:20  | 69 | 69 | 68 | 66 | 66 | 66 | 66 | 60 | 72 |
| 9:40  | 68 | 70 | 65 | 66 | 67 | 67 | 66 | 60 | 73 |
| 10:00 | 69 | 62 | 60 | 60 | 60 | 55 | 53 | 46 | 64 |

Table 3 – L<sub>90</sub>

| Time  | 63 Hz | 125 Hz | 250 Hz | 500 Hz | 1.0 k | 2.0 k | 4.0 k | 8.0 k | dB(A) |
|-------|-------|--------|--------|--------|-------|-------|-------|-------|-------|
| 9:20  | 66.8  | 60.8   | 59.4   | 57.8   | 55.2  | 53.6  | 50.8  | 42.7  | 61.4  |
| 9:40  | 66.6  | 59.7   | 57.7   | 55     | 52.8  | 49.8  | 45.5  | 36.6  | 58.5  |
| 10:00 | 66.2  | 59.4   | 58.1   | 55     | 51.7  | 48.1  | 43.6  | 33.3  | 57.7  |
| 10:20 | 66.2  | 59.1   | 57.1   | 52.3   | 48    | 43    | 36.4  | 25.7  | 54.7  |
| 10:40 | 66.7  | 60     | 58.7   | 56.9   | 54.4  | 49.7  | 44.6  | 35.8  | 59.5  |
| 11:00 | 65.7  | 62.8   | 63.8   | 64.8   | 62.7  | 61.5  | 57.8  | 51.1  | 68.7  |
| 11:20 | 65.4  | 59.9   | 58.1   | 54.4   | 51.6  | 48.6  | 45.4  | 36.7  | 57.8  |
| 11:40 | 65.5  | 59.4   | 57.5   | 53.3   | 49.5  | 46.3  | 42.7  | 32.7  | 56.3  |
| 12:00 | 65.5  | 60.2   | 59.3   | 55.9   | 53.4  | 49.9  | 47.2  | 36.3  | 59.4  |
| 12:20 | 65.4  | 62.6   | 63.3   | 62.9   | 61.1  | 59.4  | 55.8  | 50    | 67    |
| 12:40 | 65.3  | 59.5   | 58.1   | 53.1   | 49    | 45    | 39.8  | 30.6  | 55.9  |
| 13:00 | 65.7  | 61.1   | 59.4   | 56.9   | 54.7  | 51.8  | 46.9  | 35.6  | 60.6  |
| 13:20 | 65.4  | 59.3   | 58.7   | 53.5   | 50.2  | 48.3  | 46.1  | 34.8  | 57.2  |
| 13:40 | 65.7  | 59.3   | 58.1   | 53.7   | 51    | 47.2  | 41.9  | 32.6  | 57    |
| 14:00 | 65.9  | 59.3   | 58.3   | 54.5   | 54.1  | 54    | 51.3  | 48.3  | 61.5  |
| 14:20 | 65.9  | 62     | 61.6   | 59.2   | 58    | 56    | 53.1  | 50.6  | 63.9  |
| 14:40 | 67.2  | 62.3   | 61.2   | 59.8   | 56.8  | 54.6  | 53.5  | 43.6  | 64.1  |
| 15:00 | 66.3  | 62.2   | 59.3   | 57.8   | 55.1  | 51.3  | 47.5  | 41.5  | 60.8  |
| 15:20 | 64.8  | 62     | 60.5   | 59.2   | 57.2  | 53.3  | 49.4  | 44.4  | 63    |
| 15:40 | 67.5  | 62.1   | 59.7   | 56.7   | 55.1  | 51.4  | 47.5  | 42.9  | 60.7  |
| 16:00 | 68.5  | 62.5   | 61     | 57.5   | 55    | 51.8  | 49.8  | 40.6  | 61.7  |
| 16:20 | 52.7  | 54     | 51.7   | 49.7   | 46.6  | 41.9  | 37.1  | 29.5  | 52.5  |
| 16:40 | 52.1  | 53.6   | 51.6   | 48.9   | 45.5  | 40.2  | 34.1  | 23.8  | 51.1  |
| 17:00 | 52    | 53.3   | 50.9   | 47.4   | 44.4  | 38.9  | 31.9  | 21.1  | 49.8  |
| 17:20 | 51.8  | 53.7   | 51.2   | 48.7   | 45.8  | 41.4  | 35.6  | 25.4  | 51.5  |
| 17:40 | 51.8  | 53.5   | 50.4   | 46.2   | 43.7  | 37.9  | 30.5  | 18.5  | 48.8  |
| 18:00 | 51.7  | 53.7   | 49.9   | 45.9   | 43.4  | 37.3  | 29.6  | 17.7  | 48.4  |
| 18:20 | 51.7  | 53.5   | 49.7   | 45.5   | 43.2  | 37    | 29.3  | 17.6  | 48.2  |
| 18:40 | 51.7  | 53.4   | 50     | 45.7   | 43.3  | 37.3  | 29.6  | 17.8  | 48.4  |
| 19:00 | 51.4  | 53.2   | 50.2   | 45.8   | 43.3  | 37.2  | 29.2  | 17.7  | 48.4  |
| 19:20 | 51.4  | 53.3   | 50.1   | 46     | 43.2  | 37.1  | 29.4  | 17.9  | 48.4  |
| 19:40 | 51.2  | 53.1   | 49.5   | 45.2   | 42.5  | 36.4  | 29    | 17.6  | 47.7  |



ALLAWAY ACOUSTICS  
LIMITED

|       |      |      |      |      |      |      |      |      |      |
|-------|------|------|------|------|------|------|------|------|------|
| 20:00 | 49.7 | 51.3 | 46.6 | 43.5 | 40.2 | 33.9 | 26.7 | 15.4 | 45.6 |
| 20:20 | 49.5 | 51.4 | 46.8 | 43.2 | 39.8 | 34   | 27   | 16.4 | 45.5 |
| 20:40 | 49.3 | 51.2 | 46.2 | 42.9 | 39.6 | 33.2 | 26.1 | 15   | 45.2 |
| 21:00 | 49.3 | 50.7 | 45.9 | 42.9 | 39.3 | 33   | 25.9 | 14.9 | 44.8 |
| 21:20 | 49.1 | 50.7 | 46   | 42.9 | 39.3 | 33.2 | 26.1 | 14.9 | 45   |
| 21:40 | 49.3 | 50.8 | 46.1 | 43.2 | 39.7 | 33.2 | 26.1 | 15   | 45.2 |
| 22:00 | 49   | 50.4 | 45.9 | 42.8 | 39.4 | 33.1 | 26   | 14.9 | 44.9 |
| 22:20 | 48   | 48.7 | 44.8 | 41.9 | 38.7 | 32.8 | 25.8 | 14.9 | 44.1 |
| 22:40 | 47.7 | 47.7 | 44   | 41.1 | 37.4 | 32   | 25.3 | 14.9 | 42.8 |
| 23:00 | 46.9 | 47.2 | 43.8 | 41   | 37.4 | 31.8 | 25.2 | 14.9 | 42.7 |
| 23:20 | 48   | 48   | 44.4 | 41.5 | 38.2 | 32.6 | 25.7 | 15   | 43.5 |
| 23:40 | 47.7 | 48   | 44.4 | 41.5 | 38.1 | 32.5 | 25.8 | 15   | 43.4 |
| 0:00  | 47.2 | 47.6 | 44   | 41.2 | 38   | 32.3 | 25.3 | 14.9 | 43.2 |
| 0:20  | 47.1 | 47.6 | 43.8 | 40.8 | 37.1 | 31.5 | 24.4 | 14.9 | 42.5 |
| 0:40  | 45.8 | 46.9 | 43.2 | 40   | 36.4 | 30.7 | 24   | 14.8 | 41.8 |
| 1:00  | 45.5 | 46.8 | 43.2 | 40.2 | 36.7 | 31.2 | 24.5 | 14.9 | 42.1 |
| 1:20  | 46.1 | 47.3 | 43.7 | 40.6 | 37.2 | 31.8 | 25.3 | 14.9 | 42.6 |
| 1:40  | 45.9 | 47.2 | 43.6 | 40.2 | 36.6 | 31.1 | 24.8 | 14.9 | 42.1 |
| 2:00  | 45.5 | 46.8 | 43.2 | 40   | 36.5 | 31.1 | 25.2 | 15.1 | 42   |
| 2:20  | 45   | 46.2 | 43.1 | 39.7 | 36.1 | 30.7 | 24.5 | 14.8 | 41.7 |
| 2:40  | 45.8 | 47.2 | 43.7 | 39.9 | 36.4 | 30.7 | 24.2 | 14.9 | 42   |
| 3:00  | 45.2 | 46.7 | 43.5 | 40   | 36.5 | 30.8 | 24.3 | 14.9 | 41.9 |
| 3:20  | 44.8 | 46.5 | 43   | 39.4 | 35.9 | 30.3 | 23.9 | 14.8 | 41.4 |
| 3:40  | 44.7 | 46.6 | 43   | 39.7 | 36   | 30.3 | 23.7 | 14.8 | 41.6 |
| 4:00  | 45.3 | 47.1 | 43.4 | 40.1 | 36.4 | 30.8 | 24.3 | 14.8 | 41.9 |
| 4:20  | 44.6 | 46.6 | 42.9 | 39.8 | 36   | 30.3 | 23.8 | 14.8 | 41.6 |
| 4:40  | 44.3 | 46.3 | 42.6 | 39.6 | 36   | 30.5 | 23.8 | 14.8 | 41.5 |
| 5:00  | 45   | 46.7 | 43   | 39.7 | 36.1 | 30.5 | 24.1 | 14.8 | 41.6 |
| 5:20  | 45.9 | 47.4 | 43.7 | 40.3 | 36.7 | 31.6 | 24.7 | 14.9 | 42.3 |
| 5:40  | 45.9 | 47.2 | 43.6 | 40.2 | 36.7 | 31.2 | 24.5 | 14.9 | 42.2 |
| 6:00  | 46.7 | 47.5 | 44   | 40.6 | 37   | 31.7 | 24.8 | 14.9 | 42.6 |
| 6:20  | 48.5 | 49.3 | 45.7 | 43.2 | 39.4 | 34.4 | 26.5 | 15.8 | 44.9 |
| 6:40  | 48.7 | 49   | 45.1 | 42   | 38.2 | 33.2 | 25.9 | 15   | 43.9 |
| 7:00  | 48.8 | 48.9 | 45   | 42.1 | 38   | 32.8 | 25.7 | 15   | 43.8 |
| 7:20  | 49.2 | 49   | 45.3 | 42.6 | 38.7 | 33.8 | 26.5 | 15.7 | 44.5 |
| 7:40  | 49.3 | 49.7 | 46.3 | 43.3 | 39.5 | 34.5 | 27.5 | 16.2 | 45.3 |
| 8:00  | 51.5 | 51.1 | 48.3 | 45.7 | 41.9 | 37.6 | 30.9 | 19.2 | 47.6 |
| 8:20  | 65.1 | 61.7 | 59   | 57.6 | 55.6 | 53   | 49.7 | 44.1 | 61.5 |
| 8:40  | 66.4 | 61.1 | 59.4 | 58.1 | 55   | 51.8 | 48   | 43.1 | 61   |
| 9:00  | 66.2 | 59.3 | 57.5 | 55.1 | 52.2 | 48.5 | 45   | 38.1 | 58.4 |



ALLAWAY ACOUSTICS  
LIMITED

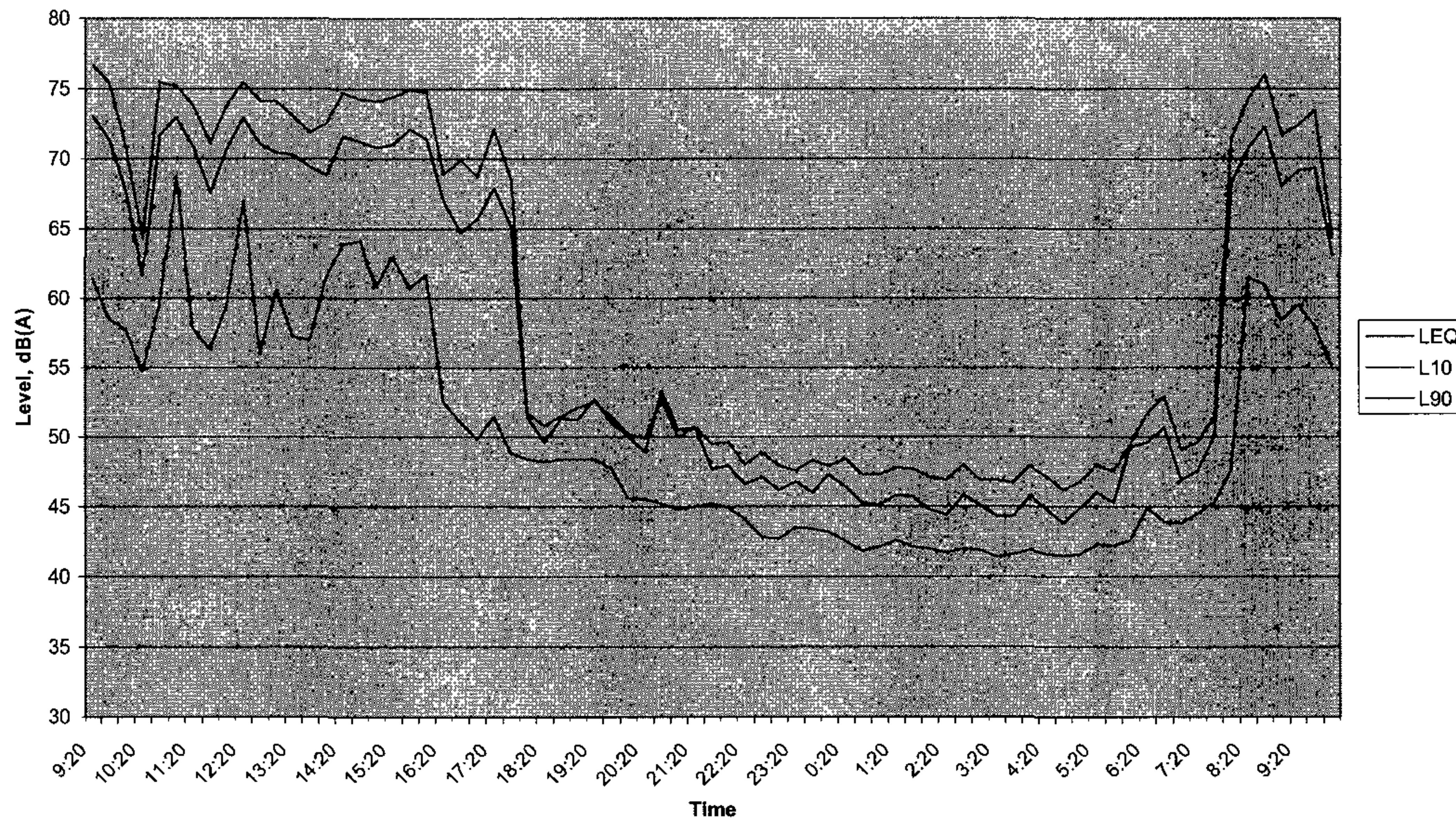
|       |      |      |      |      |      |      |      |      |      |
|-------|------|------|------|------|------|------|------|------|------|
| 9:20  | 66.5 | 59.3 | 57.9 | 55.8 | 52.9 | 50.9 | 47   | 37.2 | 59.5 |
| 9:40  | 66.3 | 59.2 | 57.2 | 55.5 | 52.1 | 48   | 42.5 | 33.3 | 58   |
| 10:00 | 66.1 | 59   | 55.8 | 53.1 | 48.7 | 43.5 | 37.9 | 27.9 | 55.1 |

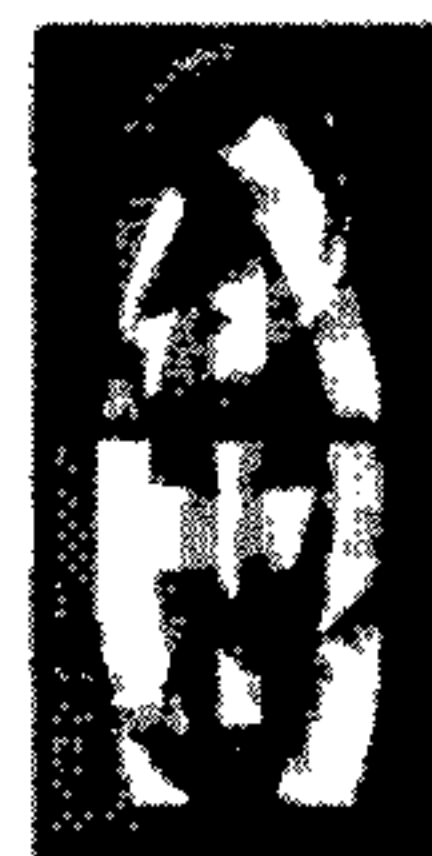
**Notes; All readings sound pressure level dB re:  $2 \times 10^{-5} \text{ Nm}^{-2}$ .**



ALLAWAY ACOUSTICS  
LIMITED

## Environmental Noise Levels





ALLAWAY ACOUSTICS  
LIMITED

## **ACOUSTIC TERMINOLOGY**

**DECIBEL (dB)** - The Decibel is a logarithmic unit used to express ratios of quantities such as sound pressure level or sound power. The logarithmic nature of the unit means that decibel values cannot be added or subtracted in the usual way.

**dBA or LA** - The A weighted scale is used to take account of the fact that the human ear is more sensitive to sounds at high frequencies than sounds at low frequencies. "A" weighted sound pressure level (sound level) measurements correspond roughly to the subjective impression of loudness of the average listener.

**LAEQ** - The LAEQ index is used as a method of averaging temporally or spatially varying sound levels. At a given position, it may be defined as the notional sound level which contains the same amount of acoustical energy as the actual (time varying) sound level over the same measurement period. The LAEQ is gaining acceptance for many types of noise assessment, and is now referred to within BS4142 (used to assess the likelihood of justifiable environmental noise complaints), and also within the Noise at Work Regulations 1989.

**LAMAX** - The LAMAX is the maximum sound pressure level (sound level) recorded during any given measurement period.

**LA10** - The LA10 is the sound level that is exceeded for 10% of the measurement period and is commonly used to describe road traffic noise, since it has been found to correlate reasonably well with complaint thresholds.

**LA90** - The LA90 is the sound level that is exceeded for 90% of the measurements period, and is generally considered to describe the background noise, since it inherently excludes the sounds of transient events.