

Linn Street, Crumpsall, New Residential Development Internal Ambient Noise Level Assessment

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Tel: 01925 759380

Email: enquiries@pdaltd.com

Web: www.pdaltd.com



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Client Address:	Company Address:
Wiggett Construction 449 Middleton Road Chadderton OL9 9LB	Philip Dunbavin Acoustics Ltd 3 Bridgewater Court Barsbank Lane Lymm WA13 0ER

Issue	Date	Author	Remark	Status
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	Name	Position
Prepared By	Tom Dixon BEng MIOA	Consultant
Checked By	Richard Cookson BSc(Hons) PhD MIOA	Principal Consultant

This document has been prepared for the client only and solely for the purposes expressly defined herein. We owe no duty of care to any third parties in respect of its content. Therefore, unless expressly agreed by us in signed writing, we hereby exclude all liability to third parties, including liability for negligence, save only for liabilities that cannot be so excluded by operation of applicable law.

This report has been prepared based upon a scope of works and associated resources agreed between the client and Philip Dunbavin Acoustics Ltd (PDA). This report has been prepared with all reasonable skill, care and diligence and has been based upon the interpretation of data collected. This has been accepted in good faith as being accurate and valid at the time of the collection. This report has been based solely on the specific design assumptions and criteria stated herein.



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1.0 SUMMARY

PDA have been commissioned by Wiggett Construction to carry out an acoustic assessment of the internal ambient noise levels for the residential development at Linn Street, Crumpsall.

A noise survey has been conducted within bedroom spaces to 2no dwelling houses to the development.

It can be noted that the noise survey was conducted during a period in which construction works to the site are ongoing.

The results of the survey were used to evaluate the internal ambient noise levels and assess compliance with the criteria stipulated by Planning Condition 14.

With the removal of construction noise, the results of the noise survey were below the stipulated criteria as given in Planning Condition 14. The results are therefore indicative that the criteria of Planning Condition 14 has been fulfilled for other residential dwellings that are part of the development.

2.0 SITE DESCRIPTION

The residential development is located to Linn Street, Crumpsall, M8 5SN.

An overview of the proposed site and development is provided below:



Figure 1. Site Layout

3.0 NOISE ASSESSMENT CRITERIA

3.1 Planning Condition 14

Planning Condition 14 for the residential development states the following.

14) (a) The development hereby approved shall be carried out in accordance with the Noise Impact Assessment prepared by Professional Consult stamped as received by the City Council, as Local Planning Authority, on the 11 June.

(b) Prior to the first use of the development, a verification report shall be submitted for approval in writing by the City Council, as Local Planning Authority, in order to validate that the work undertaken conforms to the recommendations and requirements approved as part of part (a) of this planning condition. The verification report shall include post completion testing to confirm the noise criteria has been met. In instances of non conformity, these shall be detailed along with mitigation measures required to ensure compliance with the noise criteria. Any mitigation measures shall be implemented in accordance with a timescale to be agreed with the City Council, as Local Planning Authority, and thereafter retained and maintained in situ.

It is understood from the Professional Consult report as referred to above (report ref 20.087.1.R2, dated 20/06/2020), that all glazing to all windows of the above development have been specified as a 6/12/6 glazing pane configuration or acoustic equivalent. Additionally acoustic trickle vents have been specified for Plots 8, 9, 10, 13 and 14 (minimum $D_{n,e,w}$ 42 dBA to Bed 2 on first floor level and living rooms on the ground floor). There are no specific acoustic trickle ventilation requirements for plots 1-7 and 11-12 of the above development.

The glazing and trickle vent specifications as given in the referred to Professional Consult report above have been specified on the basis that the internal ambient noise levels (IANL's) to habitable rooms are to achieve the recommended design criteria for residential properties as detailed in BS 8233:2014. The BS 8233:2014 recommended IANL's for residential properties are provided below for reference.

Table 1. BS 8233 Recommended Indoor Ambient Noise Levels

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35 $L_{Aeq,16hour}$	—
Dining	Dining room/area	40 $L_{Aeq,16hour}$	—
Sleeping (daytime resting)	Bedrooms	35 $L_{Aeq,16hour}$	30 $L_{Aeq,8hour}$

In addition to the above continuous equivalent noise levels, WHO guidelines indicates that exceedances of 45 dB L_{Amax} for single sound events should be limited to no more than 10 – 15 times per night, when measured with a 'fast' time weighting.

3.2 Planning Condition 14, Assessment Method

In order to demonstrate compliance with Planning 14 the following methodology has been agreed with the LPA.

Noise measurements are to be conducted within two of the residential bedrooms, on the worst affected façades in regards to noise ingress.

Indicative positions are illustrated in Figure 2 below.



Figure 2. Measurement Positions (Indicative)

Position P1 -Residential bedroom facing rear of Crumpsall Constitutional Club

Position P2 - Residential bedroom facing onto Linn Street

Measurements would be made over an approximate 16-hour period (to include a full night-time period, 23:00-07:00 hours) within a bedroom space at each of the indicated positions in Figure 2. It is noted that daytime measurements will likely be affected by construction activity from the site. Where this occurs the affected measurement periods will be removed from the assessment.

The noise surveys will be conducted using NTi or Rion sound level meters, for all of which current calibration certificates are held. All sound level meters are Class 1 frequency response as per BS EN 61672-1:2003. All measurements will be undertaken with a fast time-weighting and broadband statistics will be measured throughout.

The results will be corrected for internal reverberation levels and be assessed against the internal noise level criteria for bedrooms as detailed in WHO 1999 & BS 8233:2014.

4.0 SURVEY DETAILS AND RESULTS

4.1 Noise Survey Details

The survey was undertaken during the following period.

17th February (Thursday) 11:14 – 18th February (Friday) 09:35, 2022

4.2 Measurement Locations

Measurements were made within a bedroom facing onto Linn Street (Plot 1) and within a bedroom facing towards the rear of the Crumpsall Constitutional Club (Plot 9) at the first floor levels.

The measurement positions are illustrated in Figure 2 below.

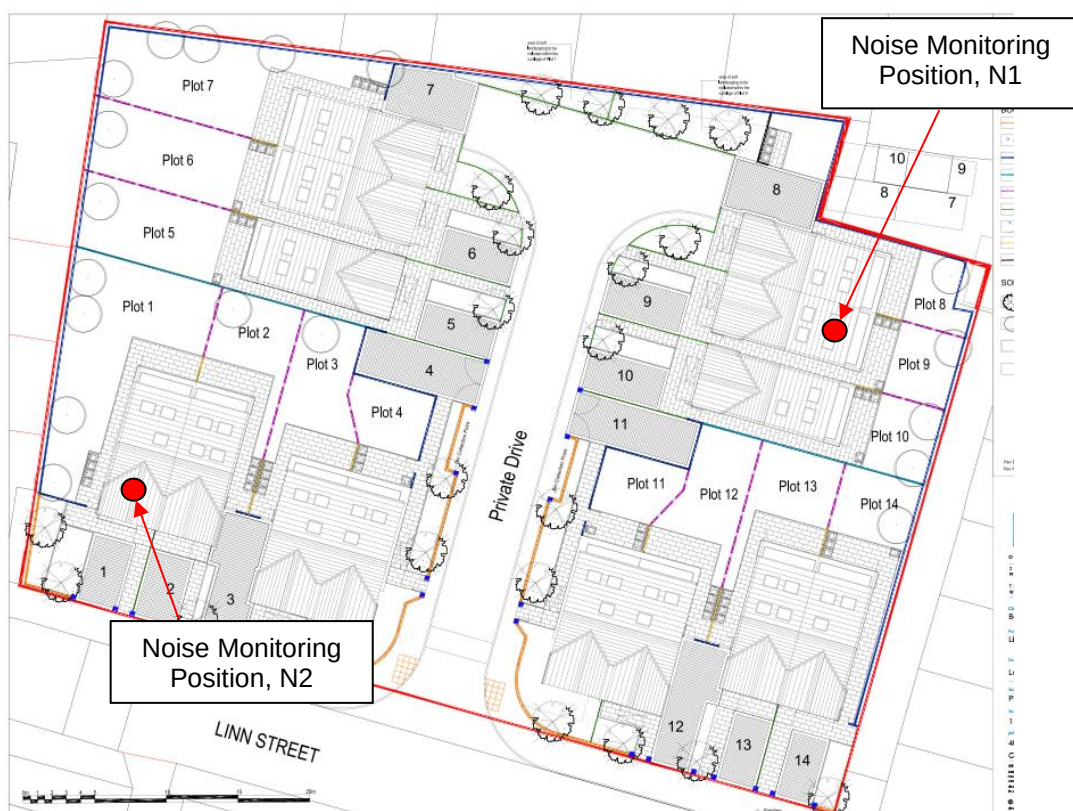


Figure 2. Noise Survey, Monitoring Positions

All measurements were undertaken with the sound level meter mounted on a tripod/pole at a 1.2m height and centrally located within the room. The external windows were kept closed with trickle vents open.

4.3 Measurement Equipment

The survey was conducted with NTI XL2 sound level meters. The meters are Type 1 accuracy (as per IEC 61672). The meters were calibrated directly before any measurement took place and immediately afterwards and no significant drift was observed. All measurements at positions N1 & N2 were made utilising a 5-minute sampling time base. Broad-band and Octave band levels were assessed simultaneously. Additionally, audio recordings were made throughout the survey.

Reverberation Time (RT) measurements were made in the bedrooms to noise monitoring position N1 & N2 in accordance with the procedures of ISO 354. The results of the noise survey have been corrected

for internal reverberation levels (to account for the inclusion of furnishings within the occupied bedroom) and assessed against the criteria of Planning Condition 14.

4.4 Description of Noise Sources & Notes

In absence of construction noise, the ambient noise level at both measurement positions N1 & N2 was observed to be noise from distant traffic sources.

Where the recorded noise levels have been affected by construction activities this has been noted and where applicable removed from consideration for the assessment as detailed in Section 5.1 below.

5.0 RESULTS

5.1 Measured Results

Full details of the noise survey results can be seen in Appendix I included at the end of this report. The results from the internal noise level assessment are summarised in the table below.

Table 2. Summary Results

Monitoring Position	* $L_{Aeq,T}$ dB (07:00-23:00)	$L_{Aeq,T}$ dB (23:00-07:00)	15 th Greatest L_{Amax} dB (23:00-07:00)
N1, Plot 9 Bedroom	25	22	42
N2, Plot 1 Bedroom	**27	22	37

Notes

*The $L_{Aeq,T}$ reported is based on measurements conducted 11:00-23:00 (17/02/2022) and 07:00-09:00 and 07:00-09:00 (18/02/2022).

**The following measurements have been removed from consideration in regards to the overall assessment.

-08:40-08:50 (18/02/2022)

-09:20-09:25 (18/02/2022)

Review of the audio recordings indicate that the above measurements were significantly affected by construction noise onsite and therefore have been removed from consideration.

From the results of the noise survey as detailed above, it can be noted that the evaluated internal ambient noise levels achieve design criteria for residential dwelling as detailed in BS 8233. The results therefore meet requirements as stipulated by Planning Condition 14.



6.0 CONCLUSION

PDA have been commissioned by Wiggett Construction to carry out an acoustic assessment of the internal ambient noise levels for the residential development at Linn Street, Crumpsall.

A noise survey has been conducted within bedroom spaces to 2no dwelling houses to the development.

It can be noted that the noise survey was conducted during a period in which construction works to the site are ongoing.

The results of the survey were used to evaluate the internal ambient noise levels and assess compliance with the criteria stipulated by Planning Condition 14.

With the removal of construction results of the noise survey were below the stipulated criteria as given in Planning Condition 14. The results are therefore indicative that the criteria of Planning Condition 14 has been fulfilled for other residential dwellings that are part of the development.

APPENDIX I -NOISE SURVEY FULL RESULTS

Noise levels recorded during the noise survey are presented below. All reported noise levels have been corrected for internal reverberation levels (to account for the inclusion of furnishings within the occupied dwelling). Noise levels are available in Octave bands and without the correction applied for the inclusion of furnishings upon request.

N1- Plot 9, Bedroom

Date	Time	L _{Aeq} dB	L _{Amax} dB
17/02/2022	11:29:26	67	86.5
17/02/2022	11:30:00	62.1	88.3
17/02/2022	11:35:00	36.5	59.2
17/02/2022	11:40:00	29.9	40
17/02/2022	11:45:00	29.2	37.2
17/02/2022	11:50:00	27.3	35.8
17/02/2022	11:55:00	27.3	32.9
17/02/2022	12:00:00	28	35.6
17/02/2022	12:05:00	28.2	35.8
17/02/2022	12:10:00	33.2	42
17/02/2022	12:15:00	37.5	50.1
17/02/2022	12:20:00	41	55.3
17/02/2022	12:25:00	29.8	42.6
17/02/2022	12:30:00	30.6	38.9
17/02/2022	12:35:00	29.4	38
17/02/2022	12:40:00	30.1	41.2
17/02/2022	12:45:00	29.2	37.4
17/02/2022	12:50:00	30.4	47.4
17/02/2022	12:55:00	29.1	36.5
17/02/2022	13:00:00	29.4	35.2
17/02/2022	13:05:00	29.7	45.6
17/02/2022	13:10:00	28.8	36.2
17/02/2022	13:15:00	29.4	43.9
17/02/2022	13:20:00	30.5	48.5
17/02/2022	13:25:00	30.3	45.8
17/02/2022	13:30:00	31.3	42.8
17/02/2022	13:35:00	32.2	47.6
17/02/2022	13:40:00	31	40.4
17/02/2022	13:45:00	30.8	42.3
17/02/2022	13:50:00	29.8	37.4
17/02/2022	13:55:00	30.7	41.7
17/02/2022	14:00:00	30	49.5
17/02/2022	14:05:00	29.7	47.1
17/02/2022	14:10:00	30.3	44.4
17/02/2022	14:15:00	29.7	45.6



Date	Time	L _{Aeq} dB	L _{Amax} dB
17/02/2022	14:20:00	30.3	38.7
17/02/2022	14:25:00	30.5	38.5
17/02/2022	14:30:00	32.9	46.7
17/02/2022	14:35:00	32.3	43.5
17/02/2022	14:40:00	31.7	37.2
17/02/2022	14:45:00	30.9	45.4
17/02/2022	14:50:00	31.1	47.9
17/02/2022	14:55:00	31.1	43
17/02/2022	15:00:00	29.6	35.9
17/02/2022	15:05:00	29.3	35.5
17/02/2022	15:10:00	28.5	36.7
17/02/2022	15:15:00	29.2	37.3
17/02/2022	15:20:00	28.7	36.7
17/02/2022	15:25:00	28.6	37
17/02/2022	15:30:00	28.9	47.2
17/02/2022	15:35:00	29.1	44.7
17/02/2022	15:40:00	28.9	45.6
17/02/2022	15:45:00	29.9	43.5
17/02/2022	15:50:00	36.7	57.7
17/02/2022	15:55:00	32.4	47.3
17/02/2022	16:00:00	29.9	38.1
17/02/2022	16:05:00	29.7	46.8
17/02/2022	16:10:00	30	40.9
17/02/2022	16:15:00	30.2	48.6
17/02/2022	16:20:00	29.4	38.4
17/02/2022	16:25:00	28.9	36.5
17/02/2022	16:30:00	29.8	37.8
17/02/2022	16:35:00	28.9	38.8
17/02/2022	16:40:00	29.6	50.6
17/02/2022	16:45:00	29.1	36.6
17/02/2022	16:50:00	29.1	36.9
17/02/2022	16:55:00	29.5	49.5
17/02/2022	17:00:00	29.2	35.5
17/02/2022	17:05:00	29.1	38.2
17/02/2022	17:10:00	28.4	35.9
17/02/2022	17:15:00	29	44.1
17/02/2022	17:20:00	29.2	37.1
17/02/2022	17:25:00	28.1	34.9
17/02/2022	17:30:00	28.4	33.7
17/02/2022	17:35:00	28.1	35.3
17/02/2022	17:40:00	28.5	36.6
17/02/2022	17:45:00	28.5	36.5



Date	Time	L _{Aeq} dB	L _{Amax} dB
17/02/2022	17:50:00	28.5	41.2
17/02/2022	17:55:00	27.8	35.5
17/02/2022	18:00:00	28.3	37.7
17/02/2022	18:05:00	29.2	40.8
17/02/2022	18:10:00	27.7	34.8
17/02/2022	18:15:00	28.9	35.8
17/02/2022	18:20:00	28.1	36.2
17/02/2022	18:25:00	28.9	37.9
17/02/2022	18:30:00	28.1	39.9
17/02/2022	18:35:00	28.5	35.5
17/02/2022	18:40:00	29.9	47.1
17/02/2022	18:45:00	28	40.9
17/02/2022	18:50:00	29.1	42.5
17/02/2022	18:55:00	28.7	37.5
17/02/2022	19:00:00	28.8	41.3
17/02/2022	19:05:00	27.9	36.4
17/02/2022	19:10:00	27.8	36.6
17/02/2022	19:15:00	29.9	47
17/02/2022	19:20:00	28.1	38.6
17/02/2022	19:25:00	27.5	37.5
17/02/2022	19:30:00	27.9	40
17/02/2022	19:35:00	27.6	36.8
17/02/2022	19:40:00	31.8	49.9
17/02/2022	19:45:00	28.7	48.5
17/02/2022	19:50:00	31.1	49.9
17/02/2022	19:55:00	31	49.1
17/02/2022	20:00:00	28.5	39.4
17/02/2022	20:05:00	28	36.7
17/02/2022	20:10:00	28.6	37.5
17/02/2022	20:15:00	27.9	40.2
17/02/2022	20:20:00	27.2	34
17/02/2022	20:25:00	27.8	37.1
17/02/2022	20:30:00	27.5	37.2
17/02/2022	20:35:00	26.7	34.6
17/02/2022	20:40:00	27.4	35.9
17/02/2022	20:45:00	26.1	34.4
17/02/2022	20:50:00	28.1	36.6
17/02/2022	20:55:00	27.1	36.7
17/02/2022	21:00:00	26.3	37.4
17/02/2022	21:05:00	25.8	36.5
17/02/2022	21:10:00	27.2	37.1
17/02/2022	21:15:00	26.3	35

Date	Time	L _{Aeq} dB	L _{Amax} dB
17/02/2022	21:20:00	27	34.3
17/02/2022	21:25:00	27.7	36.8
17/02/2022	21:30:00	26.7	36.5
17/02/2022	21:35:00	27.3	43.3
17/02/2022	21:40:00	26	39.5
17/02/2022	21:45:00	26.9	36.3
17/02/2022	21:50:00	26	39
17/02/2022	21:55:00	25.9	42.3
17/02/2022	22:00:00	26.4	33.8
17/02/2022	22:05:00	25.8	35.2
17/02/2022	22:10:00	26.3	38.1
17/02/2022	22:15:00	26	34.9
17/02/2022	22:20:00	25.4	33.2
17/02/2022	22:25:00	26.2	40.3
17/02/2022	22:30:00	24.9	32.8
17/02/2022	22:35:00	28.1	51.9
17/02/2022	22:40:00	25.8	39.1
17/02/2022	22:45:00	25.6	34.6
17/02/2022	22:50:00	25.7	35.6
17/02/2022	22:55:00	24.6	39.3
17/02/2022	23:00:00	25.3	35.9
17/02/2022	23:05:00	25.5	38.1
17/02/2022	23:10:00	25.3	34.8
17/02/2022	23:15:00	24.6	33.7
17/02/2022	23:20:00	24.4	34
17/02/2022	23:25:00	24.7	36
17/02/2022	23:30:00	24.9	33.1
17/02/2022	23:35:00	24.9	34.8
17/02/2022	23:40:00	24.1	33.5
17/02/2022	23:45:00	23.8	32.9
17/02/2022	23:50:00	24.5	33.9
17/02/2022	23:55:00	24.1	35.2
18/02/2022	00:00:00	25.4	35.6
18/02/2022	00:05:00	25.6	39.4
18/02/2022	00:10:00	23.8	31.7
18/02/2022	00:15:00	24.6	35
18/02/2022	00:20:00	24.9	31.3
18/02/2022	00:25:00	24.5	40.9
18/02/2022	00:30:00	24.6	34.5
18/02/2022	00:35:00	24.1	38
18/02/2022	00:40:00	25.8	43.2
18/02/2022	00:45:00	25.6	33.6

Date	Time	L _{Aeq} dB	L _{Amax} dB
18/02/2022	00:50:00	25.3	32.8
18/02/2022	00:55:00	24.1	32.4
18/02/2022	01:00:00	24.6	36.6
18/02/2022	01:05:00	24.2	39.8
18/02/2022	01:10:00	22.9	30.8
18/02/2022	01:15:00	25.3	35.1
18/02/2022	01:20:00	24.7	33.8
18/02/2022	01:25:00	25.7	37.1
18/02/2022	01:30:00	25.1	32.1
18/02/2022	01:35:00	25.5	34.3
18/02/2022	01:40:00	25.2	33.3
18/02/2022	01:45:00	24.1	34.3
18/02/2022	01:50:00	24.6	35.2
18/02/2022	01:55:00	25.6	35.7
18/02/2022	02:00:00	27.4	33.7
18/02/2022	02:05:00	27.3	34.3
18/02/2022	02:10:00	28.1	37.9
18/02/2022	02:15:00	29.4	36.3
18/02/2022	02:20:00	33.6	49.1
18/02/2022	02:25:00	31.5	42.3
18/02/2022	02:30:00	30	34.8
18/02/2022	02:35:00	28.5	34.9
18/02/2022	02:40:00	30.4	35.3
18/02/2022	02:45:00	32.9	46.2
18/02/2022	02:50:00	30	36
18/02/2022	02:55:00	30.8	37
18/02/2022	03:00:00	33.6	50.9
18/02/2022	03:05:00	26.5	38
18/02/2022	03:10:00	25.1	33.7
18/02/2022	03:15:00	24.2	31
18/02/2022	03:20:00	25.3	31.3
18/02/2022	03:25:00	27.4	36.6
18/02/2022	03:30:00	28.3	46.3
18/02/2022	03:35:00	27.6	34.6
18/02/2022	03:40:00	26.2	33.5
18/02/2022	03:45:00	25	32.5
18/02/2022	03:50:00	25.6	30.7
18/02/2022	03:55:00	24.1	31.2
18/02/2022	04:00:00	23.8	31.7
18/02/2022	04:05:00	24.5	34.1
18/02/2022	04:10:00	24	35.5
18/02/2022	04:15:00	24.2	36.3

Date	Time	L _{Aeq} dB	L _{Amax} dB
18/02/2022	04:20:00	25.5	47.3
18/02/2022	04:25:00	24.4	46.3
18/02/2022	04:30:00	24.3	46.4
18/02/2022	04:35:00	24.7	47.6
18/02/2022	04:40:00	27.8	54.1
18/02/2022	04:45:00	24.6	48.5
18/02/2022	04:50:00	23.4	31.6
18/02/2022	04:55:00	24.9	41.6
18/02/2022	05:00:00	25.9	36.4
18/02/2022	05:05:00	26.9	50
18/02/2022	05:10:00	29.5	48.5
18/02/2022	05:15:00	29	47.1
18/02/2022	05:20:00	26.5	33.9
18/02/2022	05:25:00	27.4	47.4
18/02/2022	05:30:00	26.5	33.9
18/02/2022	05:35:00	28.5	35.2
18/02/2022	05:40:00	32.5	59.8
18/02/2022	05:45:00	26.7	34.7
18/02/2022	05:50:00	25.5	34.3
18/02/2022	05:55:00	25.3	37.3
18/02/2022	06:00:00	27	35.1
18/02/2022	06:05:00	26.7	34.8
18/02/2022	06:10:00	26.9	48.7
18/02/2022	06:15:00	27.2	48.2
18/02/2022	06:20:00	26	39.7
18/02/2022	06:25:00	25.3	38.1
18/02/2022	06:30:00	26.6	37.6
18/02/2022	06:35:00	26.7	43.7
18/02/2022	06:40:00	26.1	33.9
18/02/2022	06:45:00	25.8	36.8
18/02/2022	06:50:00	28.1	38.8
18/02/2022	06:55:00	28.1	36
18/02/2022	07:00:00	28.9	38.6
18/02/2022	07:05:00	29.1	36.2
18/02/2022	07:10:00	27.1	34.6
18/02/2022	07:15:00	29.1	37.3
18/02/2022	07:20:00	27.7	36.3
18/02/2022	07:25:00	29.5	37
18/02/2022	07:30:00	28.1	36.8
18/02/2022	07:35:00	28.8	40
18/02/2022	07:40:00	30.5	45
18/02/2022	07:45:00	30.8	47.6



Date	Time	L _{Aeq} dB	L _{Amax} dB
18/02/2022	07:50:00	29.5	38.7
18/02/2022	07:55:00	29.6	38.5
18/02/2022	08:00:00	29.9	38
18/02/2022	08:05:00	29.6	36.3
18/02/2022	08:10:00	29.9	36.1
18/02/2022	08:15:00	30.7	36.4
18/02/2022	08:20:00	30.1	36.7
18/02/2022	08:25:00	29.6	36.3
18/02/2022	08:30:00	30	37.1
18/02/2022	08:35:00	33.4	46.1
18/02/2022	08:40:00	64.7	79.8
18/02/2022	08:45:00	52.3	67.3
18/02/2022	08:50:00	35.8	50.4
18/02/2022	08:55:00	34.5	46.3
18/02/2022	09:00:00	39.4	59.6
18/02/2022	09:05:00	35.3	52.5
18/02/2022	09:10:00	34.5	58.1
18/02/2022	09:15:00	34.6	53.6
18/02/2022	09:20:00	48.2	65.9
18/02/2022	09:25:00	42.4	59.6
18/02/2022	09:30:00	42.4	59.6
18/02/2022	09:35:00	57.7	80.7

N2- Plot 1, Bedroom

Date	Time	L _{Aeq} dB	L _{Amax} dB
17/02/2022	11:14:28	47	65.9
17/02/2022	11:15:00	61.1	86.7
17/02/2022	11:20:00	40	53.1
17/02/2022	11:25:00	30.7	44.7
17/02/2022	11:30:00	40.2	54
17/02/2022	11:35:00	29.8	45.9
17/02/2022	11:40:00	35.9	57.6
17/02/2022	11:45:00	26.3	45.2
17/02/2022	11:50:00	25.4	38.8
17/02/2022	11:55:00	24.5	45.8
17/02/2022	12:00:00	24.6	38.3
17/02/2022	12:05:00	26.7	40.4
17/02/2022	12:10:00	37.1	52.6
17/02/2022	12:15:00	40.4	55.6
17/02/2022	12:20:00	41.5	57.8
17/02/2022	12:25:00	26.4	37.6
17/02/2022	12:30:00	29.1	39.9
17/02/2022	12:35:00	27	39.9
17/02/2022	12:40:00	30.4	41.2
17/02/2022	12:45:00	30	47.8
17/02/2022	12:50:00	30.1	49.5
17/02/2022	12:55:00	28.3	40.2
17/02/2022	13:00:00	27.4	40.8
17/02/2022	13:05:00	29.3	40.1
17/02/2022	13:10:00	29.7	40.2
17/02/2022	13:15:00	29	40.5
17/02/2022	13:20:00	28.9	42.2
17/02/2022	13:25:00	28.5	44.5
17/02/2022	13:30:00	31	44.1
17/02/2022	13:35:00	32.9	46.3
17/02/2022	13:40:00	27.6	40.9
17/02/2022	13:45:00	27.3	37.2
17/02/2022	13:50:00	25.6	37.1
17/02/2022	13:55:00	27.5	42.2
17/02/2022	14:00:00	27.1	46.5
17/02/2022	14:05:00	28.5	39.3
17/02/2022	14:10:00	25.1	38.9
17/02/2022	14:15:00	28.7	44.4
17/02/2022	14:20:00	29.7	42.6
17/02/2022	14:25:00	37.4	51.7
17/02/2022	14:30:00	40.1	65.3



Date	Time	L _{Aeq} dB	L _{Amax} dB
17/02/2022	14:35:00	33.8	53.3
17/02/2022	14:40:00	32.6	50
17/02/2022	14:45:00	29.8	44.2
17/02/2022	14:50:00	47.1	77.2
17/02/2022	14:55:00	34.2	51.4
17/02/2022	15:00:00	31.7	47.2
17/02/2022	15:05:00	27.4	38.7
17/02/2022	15:10:00	25.7	41.4
17/02/2022	15:15:00	28.7	41.6
17/02/2022	15:20:00	27.4	39.4
17/02/2022	15:25:00	29.4	45.5
17/02/2022	15:30:00	26.2	37.6
17/02/2022	15:35:00	26	37.3
17/02/2022	15:40:00	27.4	39
17/02/2022	15:45:00	28.4	41.1
17/02/2022	15:50:00	27.3	39.4
17/02/2022	15:55:00	30.2	44.9
17/02/2022	16:00:00	29.3	48
17/02/2022	16:05:00	29.3	47.8
17/02/2022	16:10:00	30.7	47
17/02/2022	16:15:00	39.4	63.5
17/02/2022	16:20:00	29.5	45.5
17/02/2022	16:25:00	25.1	38.9
17/02/2022	16:30:00	26.1	38.8
17/02/2022	16:35:00	27.5	37.3
17/02/2022	16:40:00	29.2	41.5
17/02/2022	16:45:00	25.2	39.3
17/02/2022	16:50:00	25.8	39
17/02/2022	16:55:00	28.1	46.1
17/02/2022	17:00:00	25.8	39.4
17/02/2022	17:05:00	25.1	47.1
17/02/2022	17:10:00	22.8	27.1
17/02/2022	17:15:00	25.3	39.1
17/02/2022	17:20:00	26	37.5
17/02/2022	17:25:00	26.2	36.7
17/02/2022	17:30:00	26	41
17/02/2022	17:35:00	27.1	40.8
17/02/2022	17:40:00	27.6	43
17/02/2022	17:45:00	25.6	37.6
17/02/2022	17:50:00	26.8	39.2
17/02/2022	17:55:00	32.4	41
17/02/2022	18:00:00	29.6	38.6

Date	Time	L _{Aeq} dB	L _{Amax} dB
17/02/2022	18:05:00	25.1	36.6
17/02/2022	18:10:00	25.6	39.3
17/02/2022	18:15:00	27.9	42.8
17/02/2022	18:20:00	26.7	40.8
17/02/2022	18:25:00	25.4	36.7
17/02/2022	18:30:00	26.2	39.9
17/02/2022	18:35:00	27.4	38.4
17/02/2022	18:40:00	23.5	34.3
17/02/2022	18:45:00	26.8	39.9
17/02/2022	18:50:00	24.7	34.8
17/02/2022	18:55:00	28.2	40
17/02/2022	19:00:00	27.2	40.7
17/02/2022	19:05:00	29.1	41.6
17/02/2022	19:10:00	29.1	45.4
17/02/2022	19:15:00	26.8	39.8
17/02/2022	19:20:00	30.7	44.4
17/02/2022	19:25:00	29	43.9
17/02/2022	19:30:00	29.9	43.9
17/02/2022	19:35:00	28.3	40.9
17/02/2022	19:40:00	28.9	42.2
17/02/2022	19:45:00	26.4	37.9
17/02/2022	19:50:00	25.4	41.2
17/02/2022	19:55:00	24	34.2
17/02/2022	20:00:00	28.5	45.8
17/02/2022	20:05:00	26.3	40.5
17/02/2022	20:10:00	27.8	40.3
17/02/2022	20:15:00	24.9	39.4
17/02/2022	20:20:00	24.4	38.2
17/02/2022	20:25:00	24.5	35.4
17/02/2022	20:30:00	26.7	40.2
17/02/2022	20:35:00	23.4	33.3
17/02/2022	20:40:00	27	42.2
17/02/2022	20:45:00	23.6	32.3
17/02/2022	20:50:00	26.1	38.1
17/02/2022	20:55:00	24.1	35.6
17/02/2022	21:00:00	24.9	35.2
17/02/2022	21:05:00	23.6	32.7
17/02/2022	21:10:00	22.5	30
17/02/2022	21:15:00	25.2	37.8
17/02/2022	21:20:00	24.7	33.3
17/02/2022	21:25:00	23.2	28.1
17/02/2022	21:30:00	26	37.8



Date	Time	L _{Aeq} dB	L _{Amax} dB
17/02/2022	21:35:00	25.4	39.6
17/02/2022	21:40:00	26.7	39
17/02/2022	21:45:00	23.5	32.5
17/02/2022	21:50:00	23.8	27.9
17/02/2022	21:55:00	23.5	31.9
17/02/2022	22:00:00	24.4	37.1
17/02/2022	22:05:00	24.2	28.2
17/02/2022	22:10:00	23.9	33.8
17/02/2022	22:15:00	23.8	39.3
17/02/2022	22:20:00	24	32.6
17/02/2022	22:25:00	25	36.6
17/02/2022	22:30:00	22.4	24.6
17/02/2022	22:35:00	25.7	40
17/02/2022	22:40:00	25.7	37.4
17/02/2022	22:45:00	25.6	38.4
17/02/2022	22:50:00	24.2	32.9
17/02/2022	22:55:00	24.4	32.7
17/02/2022	23:00:00	24.7	37.8
17/02/2022	23:05:00	22.8	32.5
17/02/2022	23:10:00	24.5	34.3
17/02/2022	23:15:00	23.3	32.7
17/02/2022	23:20:00	24	41
17/02/2022	23:25:00	21.7	28.5
17/02/2022	23:30:00	22.8	33.9
17/02/2022	23:35:00	23.1	37.6
17/02/2022	23:40:00	21.4	27.6
17/02/2022	23:45:00	21.4	23.5
17/02/2022	23:50:00	21.9	30.5
17/02/2022	23:55:00	21.5	32.5
18/02/2022	00:00:00	22.1	26.5
18/02/2022	00:05:00	22.1	27.3
18/02/2022	00:10:00	23.7	40.5
18/02/2022	00:15:00	24.7	41.7
18/02/2022	00:20:00	22	32.5
18/02/2022	00:25:00	22.1	31.8
18/02/2022	00:30:00	23.2	34.3
18/02/2022	00:35:00	23.5	35
18/02/2022	00:40:00	24	32.5
18/02/2022	00:45:00	26.3	35.5
18/02/2022	00:50:00	24	33.9
18/02/2022	00:55:00	24.3	38.5
18/02/2022	01:00:00	21.7	29.4

Date	Time	L _{Aeq} dB	L _{Amax} dB
18/02/2022	01:05:00	21.5	30.5
18/02/2022	01:10:00	22.2	33.6
18/02/2022	01:15:00	23.4	34
18/02/2022	01:20:00	23.2	30.2
18/02/2022	01:25:00	26.2	42.1
18/02/2022	01:30:00	24.6	33.8
18/02/2022	01:35:00	24.1	31.1
18/02/2022	01:40:00	24.4	34.9
18/02/2022	01:45:00	23.6	33
18/02/2022	01:50:00	23.9	32.5
18/02/2022	01:55:00	25.5	34.9
18/02/2022	02:00:00	27.3	39.1
18/02/2022	02:05:00	27	37.4
18/02/2022	02:10:00	29.7	40.1
18/02/2022	02:15:00	29.3	35.5
18/02/2022	02:20:00	35.3	51.6
18/02/2022	02:25:00	29.3	41.5
18/02/2022	02:30:00	29.8	42.3
18/02/2022	02:35:00	29	37.2
18/02/2022	02:40:00	30.1	37.7
18/02/2022	02:45:00	34.3	51
18/02/2022	02:50:00	30.3	37.5
18/02/2022	02:55:00	31	37.5
18/02/2022	03:00:00	33.7	52.1
18/02/2022	03:05:00	26.2	42.6
18/02/2022	03:10:00	25.2	35.3
18/02/2022	03:15:00	23.9	35.3
18/02/2022	03:20:00	24.4	33
18/02/2022	03:25:00	28.2	39.3
18/02/2022	03:30:00	28.3	34.7
18/02/2022	03:35:00	28	35.3
18/02/2022	03:40:00	27.6	40.7
18/02/2022	03:45:00	25.5	34.4
18/02/2022	03:50:00	25.6	31.7
18/02/2022	03:55:00	23.3	33.5
18/02/2022	04:00:00	23	32.1
18/02/2022	04:05:00	22.4	36.9
18/02/2022	04:10:00	21.9	34.1
18/02/2022	04:15:00	23.3	31.3
18/02/2022	04:20:00	23.8	30.2
18/02/2022	04:25:00	22.7	29.8
18/02/2022	04:30:00	21.9	34.1

Date	Time	L _{Aeq} dB	L _{Amax} dB
18/02/2022	04:35:00	21.7	34.9
18/02/2022	04:40:00	21.4	31.1
18/02/2022	04:45:00	21.6	33.2
18/02/2022	04:50:00	21.6	30.9
18/02/2022	04:55:00	22.6	33.7
18/02/2022	05:00:00	25.1	36
18/02/2022	05:05:00	28.1	43.5
18/02/2022	05:10:00	30	41.4
18/02/2022	05:15:00	30	40.1
18/02/2022	05:20:00	28.1	38.4
18/02/2022	05:25:00	27.2	41.3
18/02/2022	05:30:00	28.4	43.8
18/02/2022	05:35:00	29.1	42.3
18/02/2022	05:40:00	28.5	37.8
18/02/2022	05:45:00	27.5	38.6
18/02/2022	05:50:00	25.8	36.8
18/02/2022	05:55:00	25.2	34.8
18/02/2022	06:00:00	30	37.9
18/02/2022	06:05:00	28.5	40.7
18/02/2022	06:10:00	26	37.7
18/02/2022	06:15:00	25.2	38.6
18/02/2022	06:20:00	24	32.1
18/02/2022	06:25:00	23.3	31.3
18/02/2022	06:30:00	23.9	31.3
18/02/2022	06:35:00	23.6	31.3
18/02/2022	06:40:00	23.4	27.5
18/02/2022	06:45:00	25.2	37.2
18/02/2022	06:50:00	25.7	32.8
18/02/2022	06:55:00	32.3	44.5
18/02/2022	07:00:00	28.7	39.2
18/02/2022	07:05:00	25.9	34.7
18/02/2022	07:10:00	27.6	40.8
18/02/2022	07:15:00	28	39.2
18/02/2022	07:20:00	31.6	51.2
18/02/2022	07:25:00	28.7	39.7
18/02/2022	07:30:00	28.1	40.7
18/02/2022	07:35:00	26.7	40.1
18/02/2022	07:40:00	29.6	43.5
18/02/2022	07:45:00	31.9	49.4
18/02/2022	07:50:00	30.6	54.2
18/02/2022	07:55:00	26.3	33.4
18/02/2022	08:00:00	28	37.8



Date	Time	L _{Aeq} dB	L _{Amax} dB
18/02/2022	08:05:00	28.6	41.5
18/02/2022	08:10:00	28	36.7
18/02/2022	08:15:00	28.3	38
18/02/2022	08:20:00	28.7	39.7
18/02/2022	08:25:00	28.1	39.3
18/02/2022	08:30:00	27.7	42
18/02/2022	08:35:00	30.4	41.1
18/02/2022	08:40:00	32.4	47.8
18/02/2022	08:45:00	37.9	58.9
18/02/2022	08:50:00	38.5	49.4
18/02/2022	08:55:00	37.5	49.2
18/02/2022	09:00:00	29.8	41.5
18/02/2022	09:05:00	28.6	40.9
18/02/2022	09:10:00	34.9	57.4
18/02/2022	09:15:00	60.3	82.1

APPENDIX II – DEFINITION OF ACOUSTIC TERMS

The decibel

This is the basic unit of noise, denoted dB.

A Weighting

This is a weighting process which simulates the human ear's different sensitivity at different frequencies. A weighting can be shown two typical ways, 50 dB(A) L_{eq} or 50 dB L_{Aeq} . Both mean the same thing. (See below for a definition of L_{eq}). The dB(A) level can be regarded as the overall level perceived by human beings.

L_{eq} and $L_{eq(s)}$

This is the equivalent continuous noise level which contains the same acoustic energy as the actual time-varying sound. In other words it is a kind of average noise level. It is denoted dB L_{eq} or, for A-weighted figures dB(A) L_{eq} or dB L_{Aeq} . It can also be expressed in terms of frequency analysis (see later). $L_{eq(s)}$ is the sample L_{eq} level.

L_n

This is the level exceeded for n% of the time. It is denoted dB L_n or, for A-weighted figures dB(A) L_n or dB L_{An} . It can be expressed in terms of frequency analysis (see later). L_{90} is the level exceeded for 90% of the time and is a measure of the lowest level typically reached. L_{10} is the level exceeded for 10% of the time and is the highest level typically reached. L_{50} is the level exceeded for 50% of the time and, mathematically, it is the median.

L_{max}

This is the maximum level reached during a measurement period. The "time constant", or the ability of the equipment to respond to impulses is usually expressed along with it, e.g. "Fast", "Slow", etc. It is denoted dB L_{max} or, for A-weighted figures dB(A) L_{max} , dB L_{Amax} , etc. It can also be expressed in terms of frequency analysis.

Frequency Analysis

Whereas dB(A) gives a very useful overall figure, it has its limitations in that it cannot be used to model or predict the effect of noise control and mitigation as this nearly always has radically different performance at different frequencies.

Frequency analysis expresses an overall noise level at each frequency or band of frequencies in the audible range. Octave band analysis divides the audible range into 10 bands from 31.5 Hz to 16 kHz and the noise level in each band can be expressed in any form e.g. L_{eq} , L_{90} , L_{max} etc. One third octave band analysis uses 30 bands.

Narrow band analysis takes the process to resolutions of less than 1 Hz. This is useful for identifying the existence of tones (whines, hums, etc.) and in pin-pointing the sources.