

TECHNICAL NOTE – BACKGROUND NOISE LEVEL DERIVATION

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Company:	Pembrook Design	Date:	17 September 2018
Pages:	4	Our Ref:	297098-02(00)

1. Introduction

RSK Environment has been commissioned by Pembrook Design to provide acoustic consultancy advice with regards to the proposed development at 1-2 Market Place, Reading.

As part of the works, an environmental noise survey has been carried out to determine the existing noise environment in the vicinity of the development.

Following the initial planning consultation (09 August 2018) for the project, the response from Reading Borough Council (dated 06 September 2018, ref EP/628628) requests clarification on the derivation of the representative background noise levels in the vicinity of the site with respect to the noise survey.

This technical note provides additional information regarding the statistical analysis carried out during the noise assessment in order to resolve the local authority query relating to background noise levels.

2. Reading Borough Council planning consultation query

The specific query regarding background noise levels states:

“The representative background noise (L90) used in the assessment is an 8 hourly average. It is possible that this may underestimate the effect of the noise from the plant if many of the periods are quieter than the 8 hour average. Could more information be submitted regarding the minimum L90 that was experienced and the range of L90 to conform that the average was representative of the whole night time period.”

3. Environmental noise survey

An environmental noise survey was carried out by RSK between 21-26 February 2018, as detailed in RSK report 297098-01(00)_1-2 Market Place Reading_Noise Assessment.

The report provides a summary of the noise measurements at each location, as well as representative background noise levels based on statistical analysis of the survey data.

4. Background noise level derivation

The average 16-hour or 8-hour L_{AF90} is included within Tables 3 to 6 of the RSK noise assessment report. However, plant noise limits as per Table 9 of the noise assessment are based on statistical analysis of representative noise levels, as detailed in the paragraphs following Tables 4 and 6 for locations L1 and L2 respectively, and summarised in Table 8 of the noise assessment report.

Histograms showing the distribution of $L_{AF90,15mins}$ measurements for daytime and night time periods at locations L1 and L2 have been created and used as a basis to determine the representative background noise levels, in turn informing the plant noise limits. Histograms are provided in Appendix A.

Location 1 background noise levels are based on the first peak of the bimodal distribution at 51 dBA for day, and the modal peak at 45 dBA for night, as per Figure 1 and Figure 2.

Similarly, the modal values for Location L2 have been chosen as the representative background noise levels for day and night as per Figure 3 and Figure 4.

For reference, the representative background noise levels are presented in Table 1, and resultant plant noise limits in Table 2 of this document. The plant noise limits are based on a level 10 dB below the derived representative background level.

Location L1 was positioned 1 m outside the upper floors at the front of the building, facing Market Place. Location L2 was installed in a free-field position on the upper roof at the rear of the development.

Table 1 Representative background noise levels

Receptor	Representative background noise level, $L_{AF90,15mins}$ (dB)	
	Daytime (07:00 – 23:00)	Night time (23:00 – 07:00)
L1	51	45
L2	55 ¹	49 ¹

¹ Including 3 dB façade correction as per Section 5.2.4 of the noise assessment report from the values derived from Figure 3 and Figure 4.

Table 2 Operational plant noise criteria

Receptor	Operational plant noise criteria, $L_{ar,Tr}$ (dB)	
	Daytime (07:00 – 23:00)	Night time (23:00 – 07:00)
R1 - 38-41 Market Place	41	35
R2 - 7-8 High Street	45	39
R3 - Jackson's Corner	45	39

Appendix A1 – Statistical analysis of background noise levels

Histograms showing the distribution of $L_{AF90,15mins}$ measurement results are provided in Figure 1 to Figure 4. The data is presented for monitoring positions L1 and L2, with separate graphs for daytime (07:00-23:00 hrs) and night-time (23:00-07:00) periods.

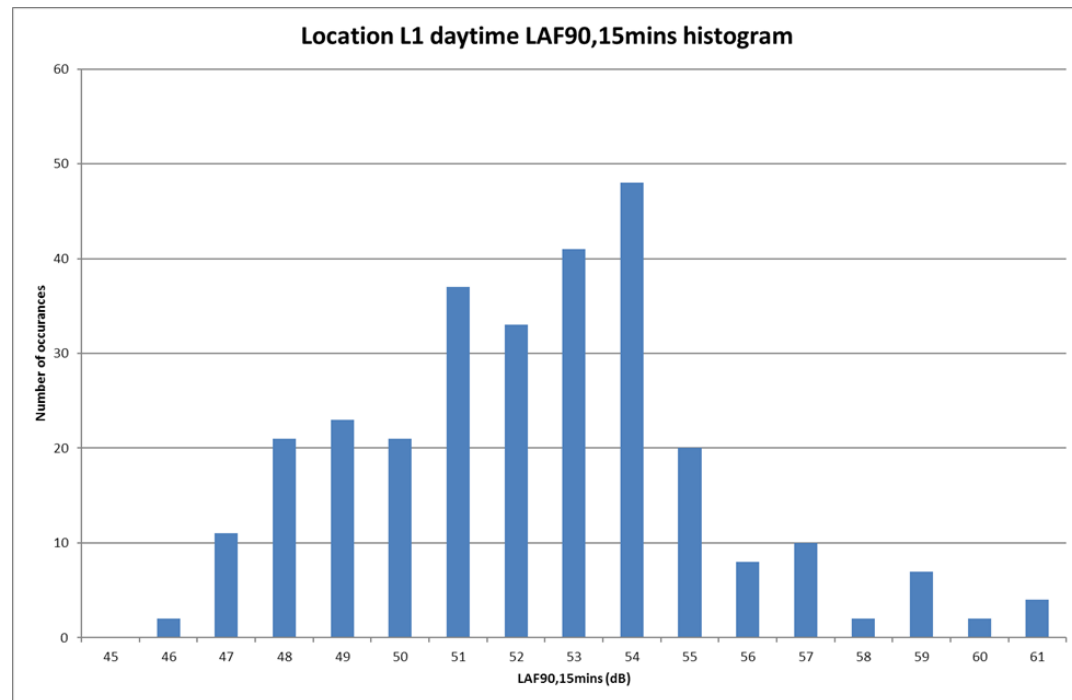


Figure 1 L1 daytime histogram

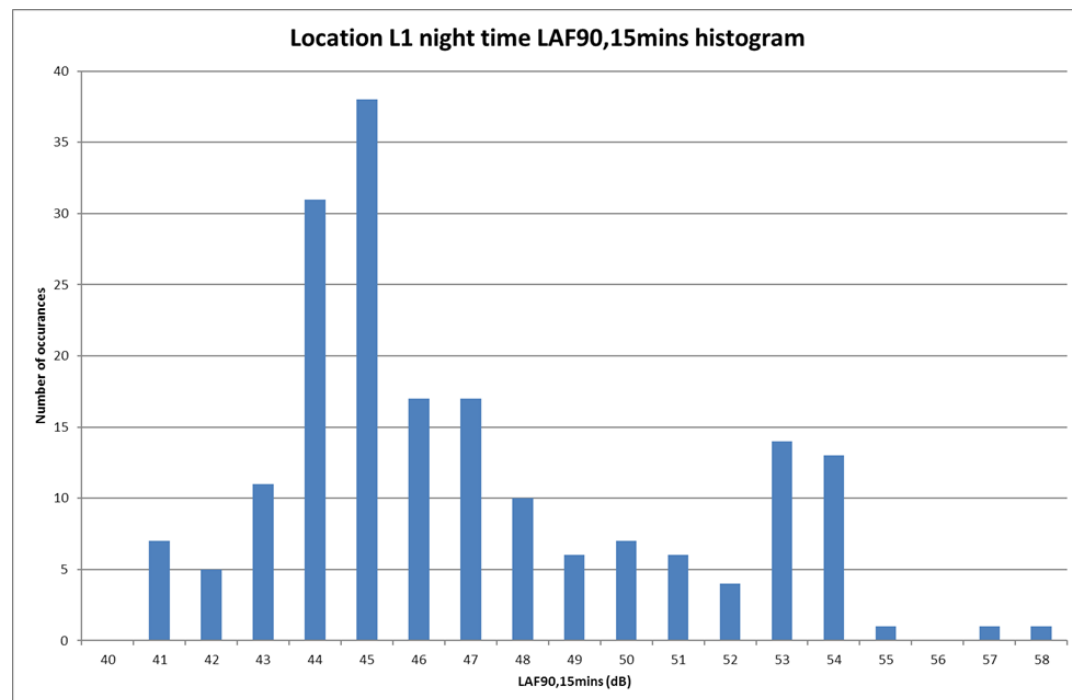


Figure 2 L1 night time histogram

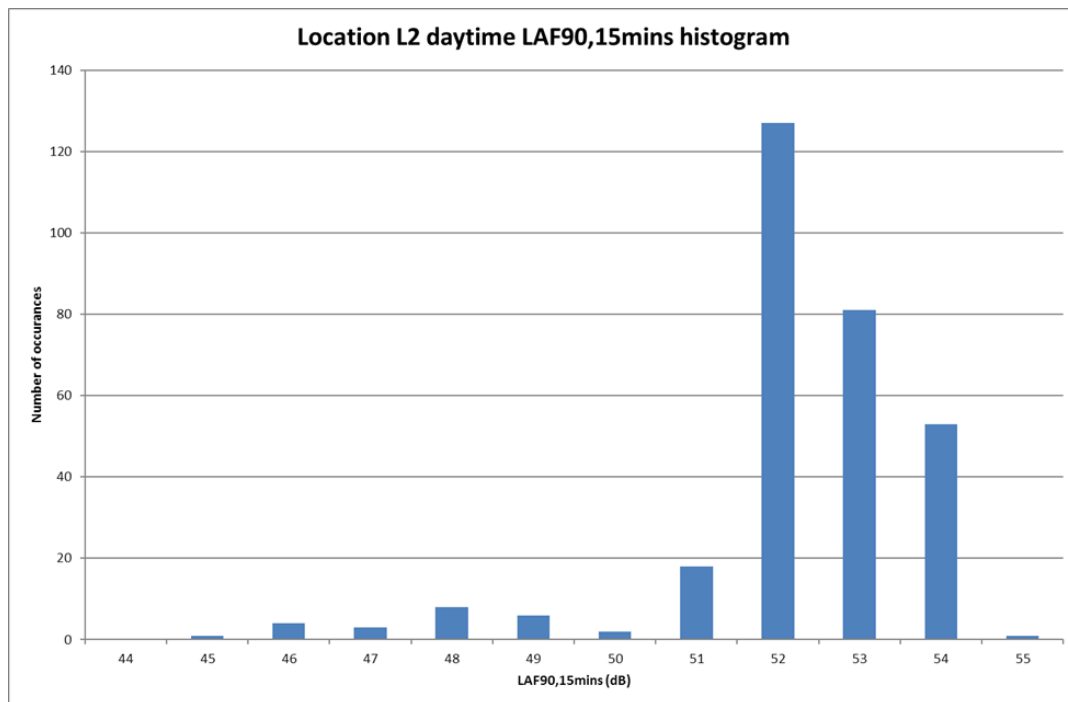


Figure 3 L2 daytime histogram

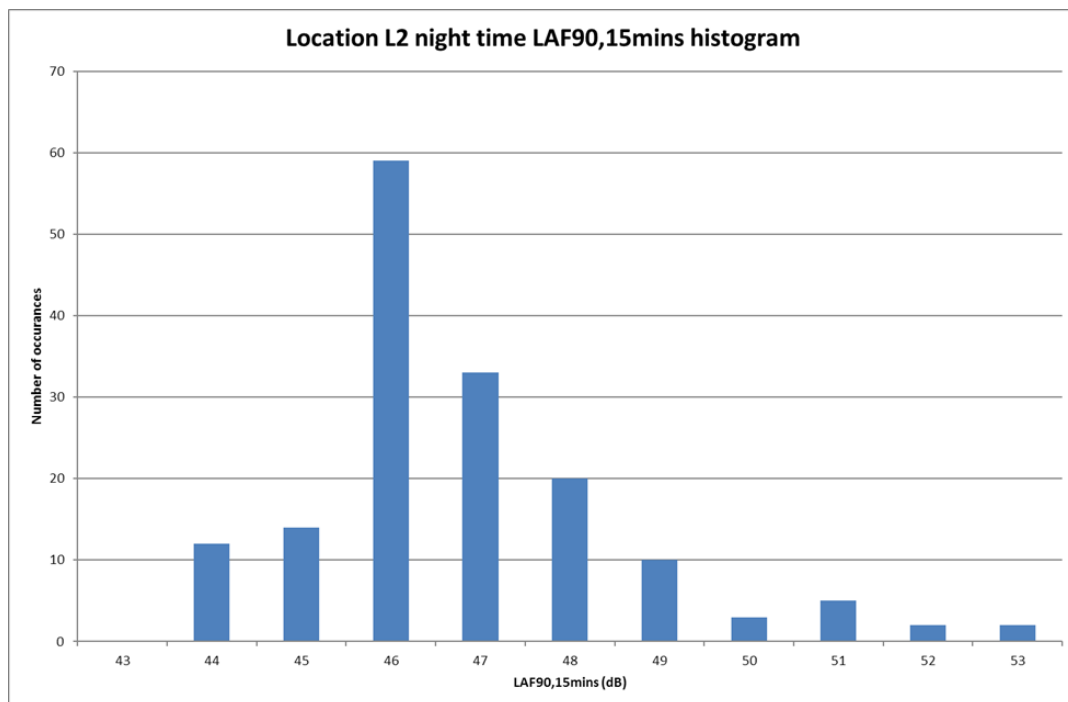


Figure 4 L2 night time histogram