

1. Glossary of Acoustic Terminology

1.1. Decibel (dB)

- 1.1.1. 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 120 dB (threshold of pain).
- 1.1.2. 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.

1.2. A-Weighting

- 1.2.1. 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 dB LA.

1.3. Description of Noise Characteristics

- 1.3.1. When a noise level is constant and does not fluctuate over time, 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 order to describe noise where the level is varying, a number of other indices, including statistical parameters, are 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. It is the level of a continuous noise that has the same total (A-weighted) energy as the real fluctuating noise, measured over the same time period.

- **L_{A10}** This is the A-weighted noise level exceeded for 10% of the specified time period.
- **L_{A90}** This is the A-weighted noise level exceeded for 90% of the time period. LA90 is used as a measure of background noise.

2. Noise Survey Data

2.1.1. Long-term Unattended Measurements

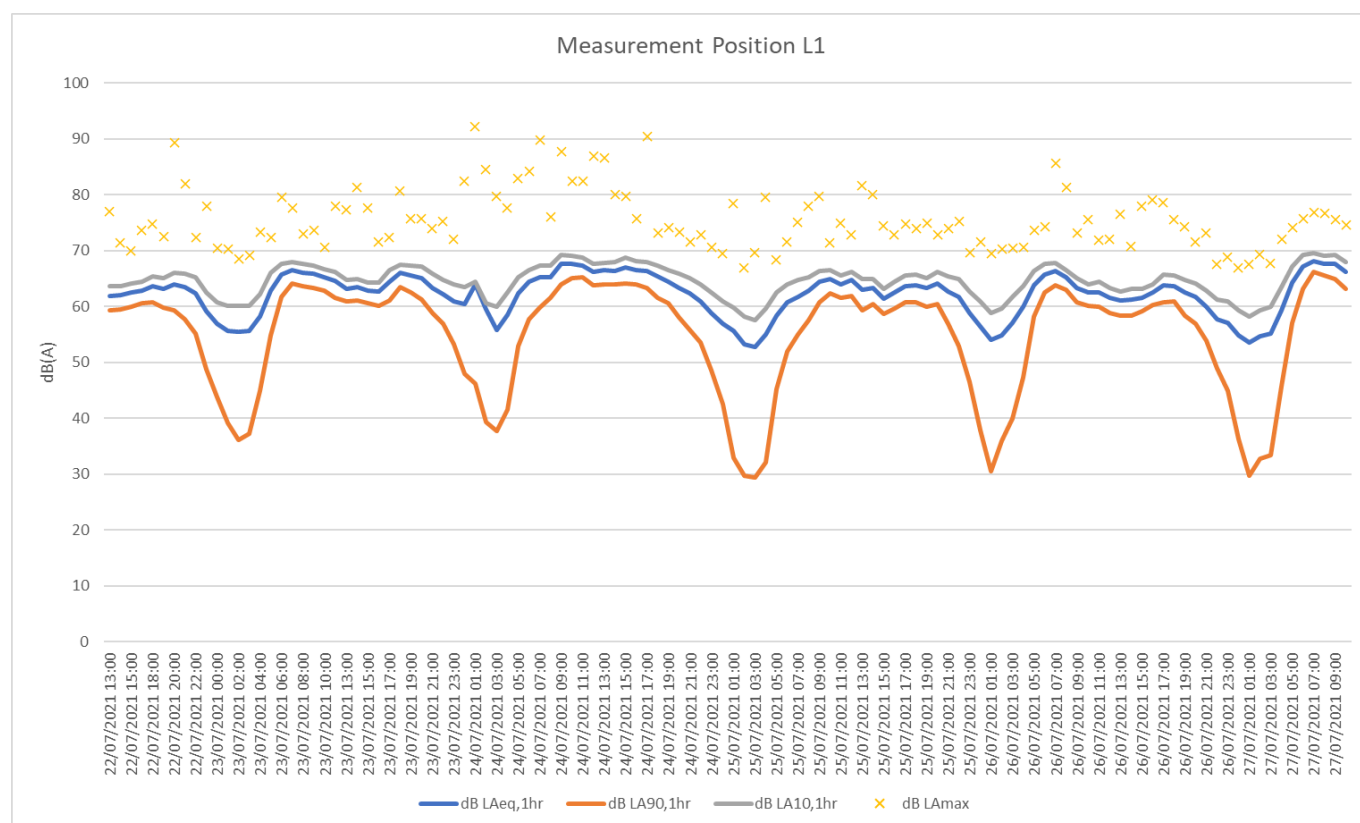


Figure XX – Long-term Unattended Data, Measurement Position L1

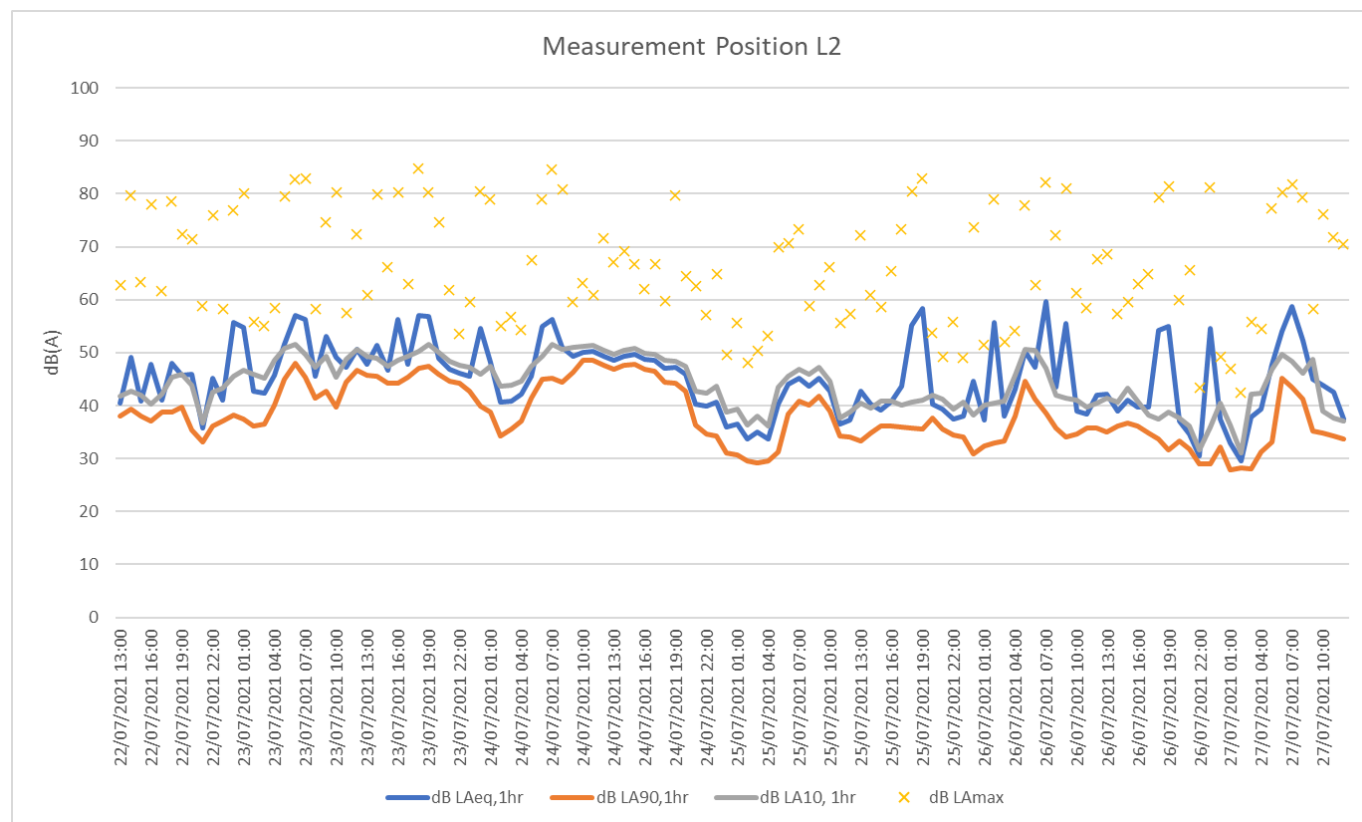


Figure XX – Long-term Unattended Data, Measurement Position L2

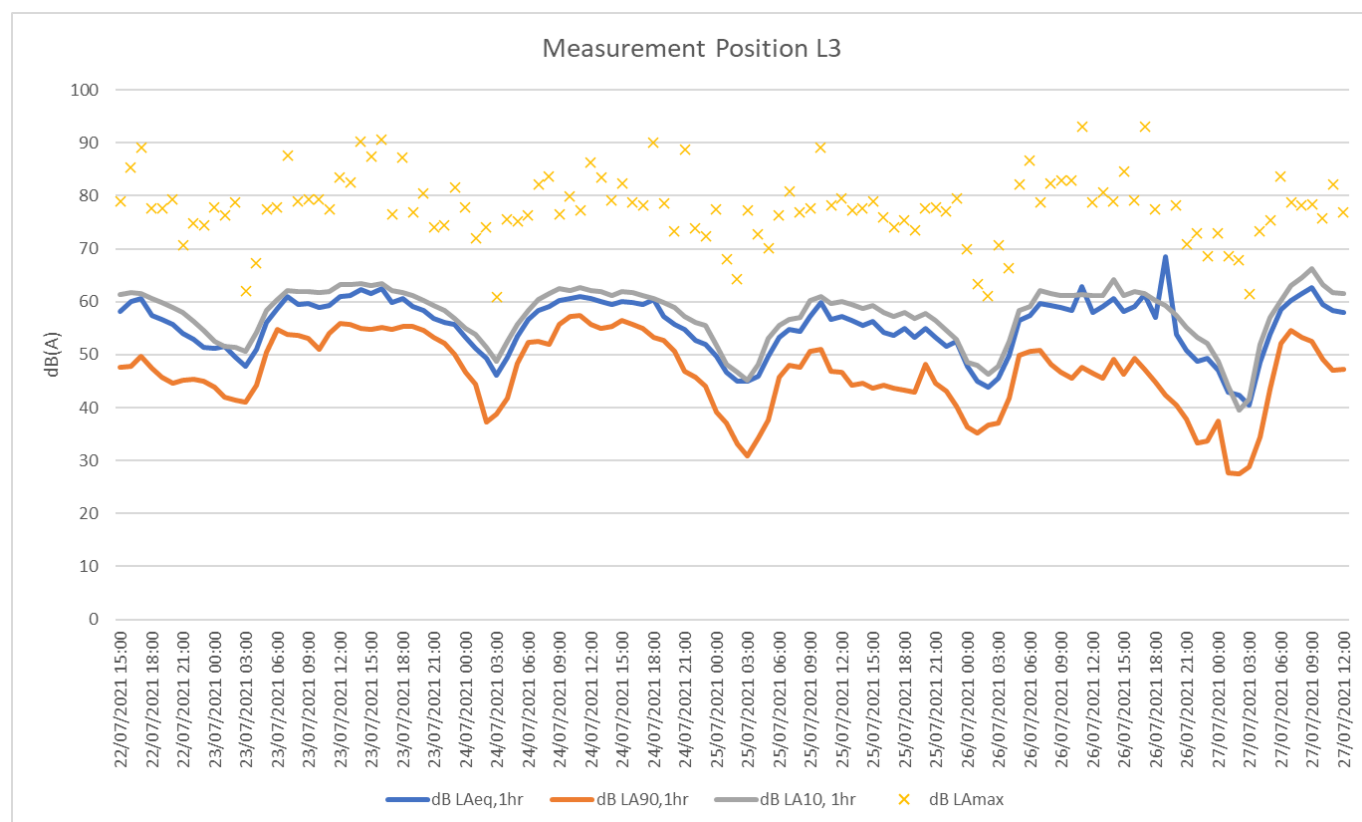
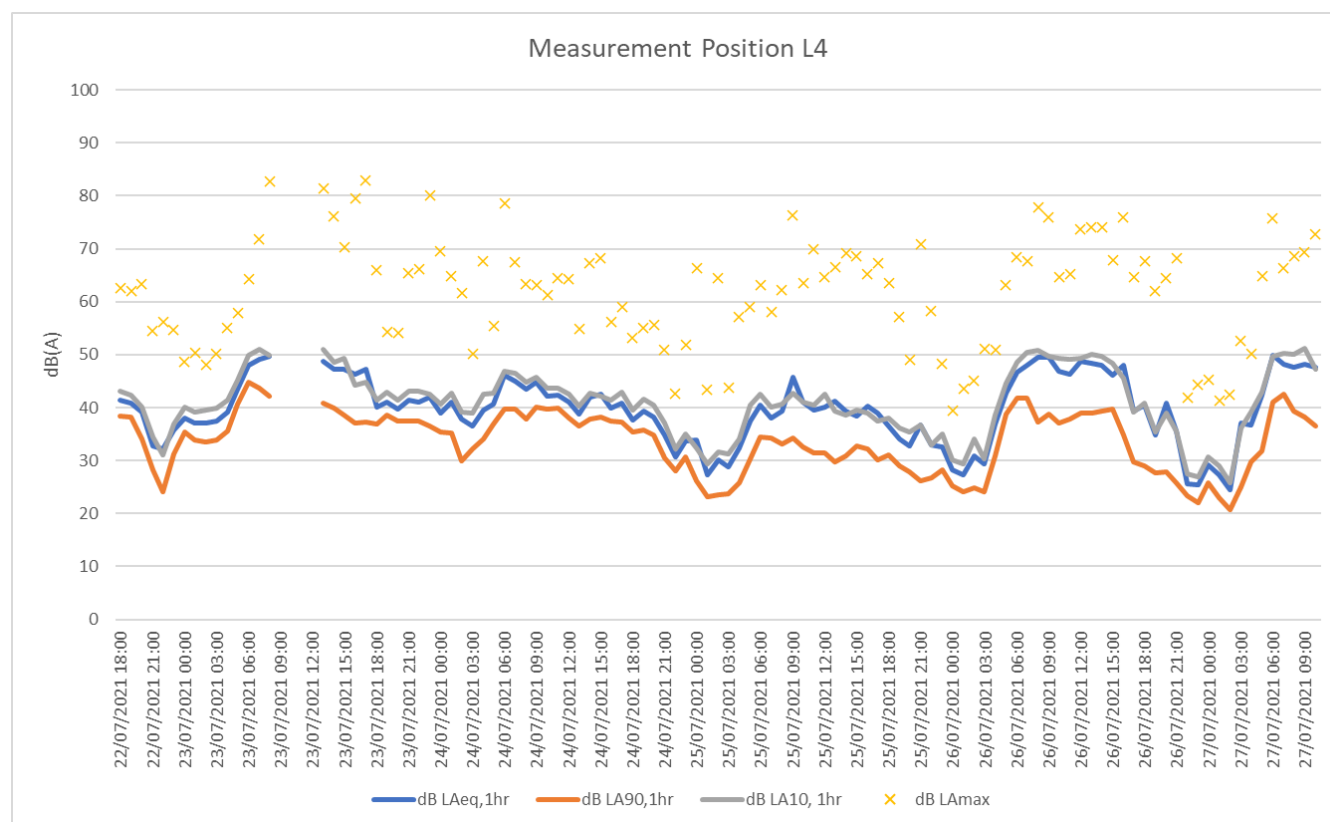


Figure XX – Long-term Unattended Data, Measurement Position L3



Note: Missing data from 09:00 until 13:00 on 23rd July as the monitor was also used for short-term attended measurements elsewhere on Site

Figure XX – Long-term Unattended Data, Measurement Position L4

2.1.2. Short-term Unattended Measurements

Table XX – Short Term Attended Data

Location	Period Start	dB LA90,15min	dB LA10,15min	dB LAFmax
S3	22/07/2021 14:27	46	43	48
S2	22/07/2021 15:07	39	35	41
S1	22/07/2021 15:54	49	47	51
S3	23/07/2021 09:29	51	49	53
S2	23/07/2021 10:02	42	39	44
S1	23/07/2021 11:03	54	52	56