

## Technical Appendix 9.1 - Acoustic Glossary

<b>Ambient sound</b>	The totally encompassing sound in a given situation at a given time, usually composed of sound from all sources near and far.																		
<b>Assessment period</b>	The period in a day over which assessments are made.																		
<b>A-weighting</b>	A frequency weighting applied to measured or predicted sounds levels in order to compensate for the non-linearity of human hearing.																		
<b>Background noise</b>	Background noise is the term used to describe the noise measured in the absence of the noise under investigation. It is described as the average of the minimum noise levels measured on a sound level meter and is measured statistically as the A-weighted noise level exceeded for ninety percent of a sample period. This is represented as the L <sub>90</sub> noise level (see below).																		
<b>Broadband</b>	Containing the full range of frequencies.																		
<b>Decibel [dB]</b>	<p>The level of noise is measured objectively using a Sound Level Meter. This instrument has been specifically developed to mimic the operation of the human ear. The human ear responds to minute pressure variations in the air. These pressure variations can be likened to the ripples on the surface of water but of course cannot be seen. The pressure variations in the air cause the eardrum to vibrate and this is heard as sound in the brain. The stronger the pressure variations, the louder the sound that is heard.</p> <p>The range of pressure variations associated with everyday living may span over a range of a million to one. On the top range may be the sound of a jet engine and on the bottom of the range may be the sound of a pin dropping.</p> <p>Instead of expressing pressure in units ranging from a million to one, it is found convenient to condense this range to a scale 0 to 120 and give it the units of decibels. The following are examples of the decibel readings of every day sounds;</p> <table border="0" style="margin-left: 20px;"> <tr> <td>Four engine jet aircraft at 100m</td> <td style="text-align: right;">120 dB</td> </tr> <tr> <td>Riveting of steel plate at 10m</td> <td style="text-align: right;">105 dB</td> </tr> <tr> <td>Pneumatic drill at 10m</td> <td style="text-align: right;">90 dB</td> </tr> <tr> <td>Circular wood saw at 10m</td> <td style="text-align: right;">80 dB</td> </tr> <tr> <td>Heavy road traffic at 10m</td> <td style="text-align: right;">5 dB</td> </tr> <tr> <td>Telephone bell at 10m</td> <td style="text-align: right;">65 dB</td> </tr> <tr> <td>Male speech, average at 10m</td> <td style="text-align: right;">50 dB</td> </tr> <tr> <td>Whisper at 10m</td> <td style="text-align: right;">25 dB</td> </tr> <tr> <td>Threshold of hearing, 1000 Hz</td> <td style="text-align: right;">0 dB</td> </tr> </table>	Four engine jet aircraft at 100m	120 dB	Riveting of steel plate at 10m	105 dB	Pneumatic drill at 10m	90 dB	Circular wood saw at 10m	80 dB	Heavy road traffic at 10m	5 dB	Telephone bell at 10m	65 dB	Male speech, average at 10m	50 dB	Whisper at 10m	25 dB	Threshold of hearing, 1000 Hz	0 dB
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<b>dB(A): A-weighted decibels</b>	The ear is not as effective in hearing low frequency sounds as it is hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the 'A' filter. A sound level measured with this filter switched on is denoted as dB(A). Practically all noise is measured using the A filter. The sound pressure level in dB(A) gives a close indication of the subjective loudness of the noise.																		
<b>Do-Minimum</b>	Describes a scenario under which the road scheme that is under consideration does not proceed.																		
<b>Façade Noise Level</b>	A noise level measured or predicted at the façade of a building, typically at a distance of 1m, containing a contribution made up of reflections from the façade itself (+3dB).																		
<b>L<sub>Amax</sub> noise level</b>	This is the maximum noise level recorded over the measurement period.																		
<b>L<sub>Amin</sub> noise level</b>	This is the lowest level during the measurement period.																		
<b>L<sub>Aeq,T</sub> noise level</b>	<p>This is the 'equivalent continuous A-weighted sound pressure level, in decibels' and is defined in British Standard 7445 as the 'value of the A-weighted sound pressure level of a continuous, steady sound that, within a specified time interval, T, has the same mean square sound pressure as a sound under consideration whose level varies with time'.</p> <p>It is a unit commonly used to describe construction noise, noise from industrial premises and is the most suitable unit for the description of other forms of environmental noise.</p>																		

- LA90 noise level** This is the noise level that is exceeded for 90% of the measurement period and gives an indication of the noise level during quieter periods. It is often referred to as the background noise level and is used in the assessment of disturbance from industrial noise.
- LA10 noise level** This is the noise level which is achieved for 10% of the monitoring period and is often used to describe road traffic noise