Appendix 7.4 - Noise Glossary

- **Absorption coefficient (α)** – the ratio of the sound energy absorbed by the function of both angle of incidence and frequency (of a surface)
- **Acoustic lagging** – a flexible material wrapped around noise sources in the same way as thermal lagging
- **Acoustic Louvres** – Similar to weather louvres (See **Louvres)**, but have sound absorbent material often on the underside behind a perforated sheet
- **Ambient noise** – Includes both residual and specific noise when present
- **Amplitude** – the maximum value of a sinusoidally varying quantity
- **Anechoic** – never having or producing echoes
- **Anemometer** – for measuring wind speed
- **Antinode** – a point, line or source of an interference pattern at which the amplitude of the sound pressure velocity is at a maximum
- **Attenuation** – weakening in force or intensity (reduction in level)
- **Bel** – ten decibels; a unit of level on a logarithmic scale which is based on the ratio of two powers, or of power related quantities such as sound intensity or the square of sound pressure
- **Bending or Flexural Waves** – elastic waves in plates, panels, beams etc, which are a combination of compression and shear waves and which are responsible for the transmission of structure-borne sound in buildings and other structures.
- **Berm** – a mound or bank of earth, used especially as a barrier or to provide insulation
- **Binaural** – relating to hearing using both ears
- **C weighting** – a frequency weighting corresponding to the 100 phon contour. The closest weighting to a linear or unweighted value.
- **Coherence** – sinusoidally varying signals (or sounds) are coherent if there is some phase relationship between them
- **dB** – Decibels, the logarithmic measure of sound. The threshold of normal hearing is between 0dB and 140dB (the threshold of pain)
- **dB(A)** – decibels measured on a sound level meter incorporating a frequency weighting (A weighting). Measurements in dB(A) broadly agree with peoples assessment of loudness
- **Diffraction** – changes in the directions and intensities of groups of waves after passing by an obstacle or through an aperture whose size is approximately the wavelength of the waves
- **Diffuse field** – a sound field in which the sound intensity is the same in all directions and at every point
- **Directivity factor** – the ratio of the sound intensity at a given distance from the source, in a specified direction, to the average intensity over all directions, at the same distance.
- **Doppler effect** – the change in the observed frequency of a wave caused by relative motion between source and receiver
- **Fast Response Time** – the response time of sound pressure meters which corresponds to a time constant of 0.125s. This approximates the integration time of our hearing system
- **Fg** – femtogram 10^{-15}g 0.000000000000001g
- **Free Field** – A sound field in which no significant sound reflections occur
- **Hz** – Hertz. A unit of frequency, equal to one cycle per second. Frequency is related to the pitch of a sound
- **Impule** – a transient signal of short duration, impulsive noise is often described by words such as bang, thump, clatter.

- **Infrasound** – <20Hz
- **Integral** ∫- a number computed by a limiting process in which the domain of a function, often an interval or planar region, is divided into arbitrarily small units, the value at a point in each unit is multiplied by the linear or areal measurement of that unit, and all such products are summed
- **Inter Alia** – In a UK legal context this means 'amongst other things'
- L_{AeqT} – The equivalent noise level over a time period T
- L_{A90T} – The A weighted noise level exceeded for 90% of the specified measurement period
- $L_{A10, 18h}$ – The arithmetic average of the 18 hourly LA101h values from 06.00 to 24.00
- L_{A10T} – the A weighted level of noise exceeded for 10% of the specified measurement period (T). It gives an indication of the upper limit of fluctuating noise such as that from road traffic
- L_{eq} – period equivalent (energy) continuous level
- **Louvre** – a framed opening, as in a wall, door or window, fitted with fixed or movable horizontal slats for admitting air and light and shedding rain
- L_w **(SWL or PWL)** – Sound Power Level
- **Masking** – the process whereby the threshold of hearing for one sound is raised due to the presence of another, thus rendering the first sound inaudible
- **Mass law** – an approximate relationship for predicting the sound reduction index of panels and partitions, based only on the surface density of the panel and the frequency of the sound
- **Mel** – a unit of pitch
- **mg** – milligram – 10^{-3}g - 0.001g
- **ng** – nanogram – 10^{-9}g - 0.000000001g
- **Namogram** – a chart representing numerical relationships
- **Near Field** – of a sound source; the region of space surrounding the source where sound pressure and acoustic particle velocity are not in phase, and the sound pressure varies with position in a complex way
- **NEC** – Noise Exposure Categories
- **Noise exposure** – the total sound energy received
- **Noise sensitive location** – Any dwelling, hotel or hostel, health building, educational establishment, place of worship or entertainment, or any other facility or area of high amenity, which for its proper enjoyment requires the absence of noise at nuisance levels
- **Octave** – the range between two frequencies whose ratio is 2:1
- **Oscillation** – the variation, usually with time, of the magnitude of a quantity with respect to a specified reference when the magnitude is alternately greater and smaller than the reference
- **Peak particle velocity** – The rate of change of displacement of particles in a solid medium
- **Percentile** – a value of a variable below which a certain percent of observations fall
- **Period** – of a repetitive signal; the time for one cycle
- **pg** –picogram – 10^{-12}g 0.000000000001g
- **Phase** – a position of a point in time (instant) on a waveform cycle
- **Phase difference** – the difference between the phase angles (of two sinusoidal signals of the same frequency)
- **Phon** – the unit expression of loudness level
- **Pink Noise** – noise with a continuous frequency spectrum but equal energy per constant-percentage bandwidth, such as per octave band or per 1/3

octave band. Thus pink noise appears on a one third octave or octave band chart as a horizontal line

- **Plane wave** – a wave in which the waveforms are plane and parallel everywhere, so the sound energy does not diverge with increasing distance from source
- **Plant** – **a.** A building or group of buildings for the manufacture of a product; a factory
  b. The equipment, including machinery, tools, instruments, and fixtures and the buildings containing them, necessary for an industrial or manufacturing operation
- **Point Source –** an idealised concept of an acoustic source which radiates spherical waves
- **Power level (PWL)** – The power level, in decibels, is 10 times the logarithm to the base 10 of the ratio of a given power to a reference power level
- **PPS** – Planning Policy Statement. (Replaced PPGs – Planning policy Guidance)
- **PPG** – Planning Policy Guidance notes
- **PPV** – Peak particle velocities – the maximum speed of movement of a point in the ground during the passage of a vibration
- **Private nuisance** – An unlawful interference or annoyance which causes damage to an occupier or owner in respect of his or her use and enjoyment of his or her land, and of certain rights over in connection with land. A private nuisance is a tort.
- **Propagation** – the process by which a disturbance, such as the motion of sound waves is transmitted through a medium such as air. The movement of a wave through a medium
- **Public Nuisance** – an act or omission which materially affects the reasonable comfort and convenience of life and class of her majesty's subjects. A crime created by the common law, i.e. it is considered so harmful that people breaking the law should be punished by the state for the good of the people.
- **Pure Tone** – a pure tone is a sound wave, the sound pressure of which is a simple sinusoidal function of time (a sound in which the sound pressure varies regularly, at a single frequency, over time)
- **Random noise** – an oscillation, the instantaneous magnitude of which is not specified for any given instant.
- **Reference time interval** – the time interval over which a noise is measured or calculated for assessment purposes
- **Residual noise** – the noise level in the area in the absence of the noise source under investigation
- **Retaining Wall** – a structure that holds back soil from a building, structure or area
- **Reverberation** – The sound that persists at a given point after direct reception from the source has stopped
- **RMS Velocity** – Root Mean Square Velociy. The root mean square velocity is defined as the square root of the average velocity-squared of the molecules in a gas
- **Root mean quad (RMQ)** – The RMQ value of a set of numbers is the fourth root of the average of the fourth powers of the numbers
- **Root mean square (RMS)** – the RMS value of a set of numbers is the square root of the average of their squares
- **RPB** – Regional Planning Body
- **RPG** – Regional Planning Guidance

- **Sabin (square meter of unit absorption)** – The Sabin is a measure of the sound absorption of a surface, it is the equivalent of $1m^2$ of perfectly absorptive surface.
- **Secondary glazing** – not the same as double glazing – it involves the installation of an additional internal window – most primary windows -25-30dB, secondary – up to 45dB
- **Simple harmonic motion** – a single frequency vibration, i.e. one in which the displacement varies sinusoidally with time
- **Single leaf partition** – all types of solid homogenous panels where both faces are rigidly connected
- **Sinusoidal** – Of, relating to, shaped like, or varying according to a sine curve or sine wave
- **Sound intensity** – the rate of flow of sound energy crossing a surface of unit area in a given direction
- **Sound Power Level (PWL or Lw)** – The sound power of a source is the total sound energy radiated by the source per unit of time
- **Sound Propagation** – the transfer of sound energy across a boundary from one point to another
- **Sound transmission** – the transfer of sound energy across a boundary from one medium to another
- **Specific noise** – Noise from the source under investigation
- **SPL** – Sound Pressure Level (dB calculated from Pascals)
- **Standing Waves** – a wave system characterised by a stationary pattern of amplitude distribution in space arising from the interference of progressive waves, also called stationary waves
- **Strain** – the fractional change in shape due to an elastic deformation in a material caused by an applied stress
- **Stress** – force per unit area, measured in N/m^2, stress applied to elastic materials causes strain
- **Tinnitus** – a subjective sense of noises in the head or ringing in the ears for which there is no observable cause
- **Tonality** – The degree to which a noise contains pure tones. Broadband noise (across a wider range of frequencies) is generally less annoying than noise with identifiable tones
- **Tone** – a sound which produces the sensation of pitch
- **Tort** – a civil wrong which is generally not bad enough to be treated as a crime
- **Transmission loss** – the reduction in the magnitude of some characteristic of a signal between two stated points in a transmission system
- **Ug (mcg)** – microgram – one millionth of a gram $10^{-6}g$
- **Ultrasound** – acoustic waves with frequencies which are too high to be heard by human ears (>20kHz)
- **Use Classes Order** – Setting land use into Classes A-D enabling changes in use within a class without planning permission
- **Vibration** – regularly repeated movement about a fixed point
- **Vibration Dose Value (VDV)** – vibration measurement parameter that combines the magnitude of vibration and the time for which it occurs. The measurement is based on a form of acceleration that is frequency weighted to reflect human sensitivity to various frequencies
- **W** – watt – measure of power
- **White noise** – noise with a continuous frequency spectrum with equal energy per hertz over a specified frequency range.