

# Glossary

A-weighting	A frequency weighting scale, which corrects the sound pressure levels in individual frequency bands according to human ear sensitivities. The scale is based upon the fact that the region of highest sensitivity for the average ear is between 2,000 and 4,000 Hz. Sound levels are measured on a logarithmic scale in decibels, dB. The universal measure for environmental sound is the A-weighted sound level, dBA.
Airborne Sound	Sound that reaches the point of interest by propagation through air.
Airshed	An airshed is an area where the movement of air and air contaminants is restrained by weather conditions or local geographic features (i.e., mountains). The geographic extent of the Lower Fraser Valley airshed includes the Canada/USA shared surface area bound by the Coast and Cascade Mountain Range and the Strait of Georgia. The Canadian portion of the Lower Fraser Valley airshed extends from Lions Bay to the District of Hope.
Archaeology Branch	The branch of British Columbia's Ministry of Forests, Lands, Natural Resource Operations and Rural Development that has authority over the archaeological assessment and review process in the province.
Archaeological impact assessment (AIA)	An in-field study that identifies potential conflicts between a development and archaeological sites. The study includes an assessment of significance and potential impacts for any sites identified, and recommendations for managing impacts. AIAs are conducted under a Section 14 <i>Heritage Conservation Act</i> inspection permit.
Archaeological overview assessment (AOA)	A study to assess the potential for archaeological sites in an area. May be desktop study or include an in-field component (i.e. preliminary field reconnaissance [PFR]).
Area source	Area sources represent emission sources that span over region and not isolated to one stationary point. For example, agricultural operations.

Average peak load factor	Represents the average ratio of passengers actually carried versus the capacity of a transit vehicle, where a factor of one means the vehicle is full.
Bands (octave, 1/3 octave)	A series of electronic filters separate sound into discrete frequency bands, making it possible to know how sound energy is distributed as a function of frequency. Each octave band has a center frequency that is double the center frequency of the octave band preceding it.
Best Management Practices	Recommended protocols developed by regulatory agencies or science-based groups to meet regulatory requirements.
Business-as-usual	scenario in which the Project is not built (e.g. 96 B-Line remains).
Carbon dioxide equivalent	Greenhouse gases are often rolled up and presented in combined units of tonnes of CO <sub>2</sub> equivalents (t CO <sub>2</sub> e). This is achieved by multiplying each greenhouse gas by its global warming potential to provide a common unit of measure and sum emission estimates of different gases.
Census Tract	Small, relatively stable geographic area that usually has a population between 2,500 and 8,000 persons.
Climate	A statistical description of weather conditions over long periods of time as a function of temperature, precipitation, humidity, winds, pressure, and solar radiation and other meteorological variables in a given region.
Commercial, recreational or Aboriginal (CRA) fishery	Defined under the <i>Fisheries Act</i> as: fish that may be harvested under the authority of a license for the purpose of sale, trade or barter (commercial fishery); for personal use of the fish or for sport (recreational fishery) or by an Aboriginal organization or any of its members for the purpose of using the fish as food, for social or ceremonial purposes or for purposes set out in a land claims agreement entered into with the Aboriginal organization (Aboriginal fishery).
Common air contaminant	Air contaminants for which ambient air quality objectives are established to inform airshed management decisions are called common air contaminants. Air contaminants are emitted from many sources in industry, mining, transportation, power generation and agriculture. This report focuses on the following CACs: nitrogen dioxide (NO <sub>2</sub> ), carbon monoxide (CO), sulphur dioxide (SO <sub>2</sub> ), respirable particulate matter (PM <sub>10</sub> ), inhalable particulate matter

	(PM2.5) and ozone (O3)
Community Heritage Register	An inventory of significant heritage sites created by a local government.
Community Type Adjustment	Decibel adjustment to the MNL based on community description such as urban residential, normal suburban residential. Community descriptions are based on population densities (Health Canada 2017).
Complete street design	streets designed to increase safety, improve visual quality and user comfort.
Construction Environmental Management Plan	A document that will guide environmental management of the Project during the construction phase.
Day-night equivalent sound level	The day-night equivalent sound level (Ldn) is a 24-hour time-averaged Leq, describing a receiver’s cumulative noise exposure from all events over a full day. The Ldn includes a +10 decibel adjustment during the nighttime as a penalty for sounds occurring during the night period to account for greater nighttime sensitivity to noise.
Daytime	Defined as the hours from 07:00 AM to 10:00 PM.
dB – Decibel	The logarithmic units associated with sound pressure level, sound power level, or acceleration level. See sound pressure level, for example.
dBA - Decibel, A-Weighted	The logarithmic units associated with a sound pressure level, where the sound pressure signal has been filtered using a frequency weighting that mimics the response of the human ear to quiet sound levels. The resultant sound pressure level is therefore representative of the subjective response of the human ear. A-weighted sound pressure levels are denoted by the suffix ‘A’ (i.e., dBA), and the term pressure is normally omitted from the description (i.e., sound level or noise level).
Decibel Addition	<p>In acoustics, due to the logarithmic nature of the decibel scale, two or more sound pressure levels (denoted as SPL1, SPL2 ... SPLn) are added as follows:</p> $SPL1 + SPL2 + \dots SPLn = 10 \log (10 (SPL1/10) + 10(SPL2/10) + \dots + 10(SPLn/10))$ <p>As an example:</p> $0 \text{ dB} + 0 \text{ dB} = 3 \text{ dB}$

50 dB + 50 dB = 53 dB

50 dB + 47 dB = 52 dB

50 dB + 40 dB = 50 dB

Deleterious substance	Defined under the <i>Fisheries Act</i> as: any substance, that if added to any water, in such quantity and concentration, that if added to water, would degrade or alter or form part of a process of degradation or alteration of the quality of that water so that it is rendered or is likely to be rendered deleterious to fish or fish habitat or to the use by man of fish that frequent that water”
Electromagnetic compatibility	The ability of different types of electrical equipment to function properly in a common electromagnetic environment. High electromagnetic compatibility indicates low electromagnetic interference.
Electromagnetic field	A combination of an electric field and magnetic field that is produced by electrically charged objects.
Electromagnetic interference	A disturbance from an external electromagnetic field that can degrade the performance of another electrical circuit or stop the electrical circuit from functioning.
Emission factor	A representative value that relates the quantity of contaminant released to the atmosphere with an activity or input associated with the release of that substance.
Energy Averaging, $L_{eq}$	Noise levels are seldom averaged arithmetically. Logarithmic averages are required to obtain an energy averaged noise level. $L_{eq}$ descriptors are energy-averaged, which means that they represent a continuous equivalent (energy-averaged) sound level calculated over a specified period of time. It represents the average sound pressure encountered for the period. The time period is often added as a suffix to the label (e.g., $L_{eq}(24)$ for the 24-hour equivalent sound level). A $L_{eq}$ value expressed is a good, single-value descriptor of the level of noise.
Environmental Work Plan	Detailed plan that will include both written procedures and accompanying figures to guide activities at specific sites where there is a risk of environment effects.
Equipment Load factor	Average fraction of rated power used in equipment duty cycle. This takes into account that the engine, when turned on, is operating somewhere between idle speed and full power.

Fish	Defined under the <i>Fisheries Act</i> as: (a) parts of fish; (b) shellfish, crustaceans, marine animals and any parts of shellfish, crustaceans or marine animals, and; (c) the eggs, sperm, spawn, larvae, spat and juvenile stages of fish, shellfish, crustaceans and marine animals.
Fish Habitat	Defined under the <i>Fisheries Act</i> as: spawning grounds and any other areas including nursery, rearing, food supply and migration areas on which fish depend directly or indirectly on in order to carry out their life processes.
Frequency	The number of times per second that the sine wave of sound or of a vibrating object repeats itself. Now expressed in hertz (Hz), formerly in cycles per second (cps).
Frequent transit network	TransLink designation for corridors with transit service at least every 15 minutes, 7 days a week.
Frequency	The number of times per second that the sine wave of sound or of a vibrating object repeats itself. Now expressed in hertz (Hz), formerly in cycles per second (cps).
Fugitive emission	Fugitive emissions are sources that release emission involuntarily
Global warming potential	Capacity of a greenhouse gas to absorb energy and warm the atmosphere is referred to as the global warming potential (GWP). Carbon dioxide has a GWP of 1 and is used as a reference gas for other GHG GWPs. Methane and N <sub>2</sub> O have a GWP of 25 and 298, respectively.
Greenhouse Gas	Greenhouse gases are any atmospheric gases that absorb and re-emit infrared radiation, warming the lower levels of the atmosphere GHGs considered in this report include carbon dioxide (CO <sub>2</sub> ), nitrous oxide (N <sub>2</sub> O), and methane (CH <sub>4</sub> ).
Greenhouse Gas Intensity	Greenhouse gases emissions per unit of electricity (for example (tonnes of CO <sub>2</sub> e/kWh))
Green Infrastructure Network	As defined in the City of Surrey's Biodiversity Conservation Strategy, the Green Infrastructure Network is an urban interconnected system of green areas that includes corridors, sites, and hubs.
Hertz (Hz)	A measure of frequency. Normal hearing range is usually from ~20Hz to 20,000 Hz. The unit of frequency equivalent to a number cycles per second.

Impermeable surface	Solid ground surface that does not enable surface water to filter into underlying soils and ground water.
Impulsive Noise	Characteristic of (acoustic) noise which includes unwanted, impulsive like short sharp sounds that can increase potential noise effects. The impulsive characteristic of source noise can be dealt with by adjustments in the Project’s equipment sound power level
Indicator	Metrics used to quantify change and qualitative descriptors used to describe change.
Invasive species	Non-native plant or animal species that poses negative effects on people, other plant or animal species, ecosystems, or the economy and has potential to spread to other areas of British Columbia.
Kill switch	A mechanism designed to stop the light rail train if a condition is triggered (e.g., train operator inactivity).
Lithic scatter	Stone tools and stone tool making debris.
Major Bikeway Network:	TransLink designation for bicycle routes running parallel to rapid transit, that connect urban and/or regional centres, and are integrated with existing local, regional, and inter-regional bikeways and trails.
Migratory bird	Bird species protected under the federal <i>Migratory Birds Convention Act, 1994</i> . Families and subfamilies of protected birds are listed on Article I of the Act.
Mitigation Noise Level	The Mitigation Noise Level (MNL) represents a noise level at which Health Canada (2017) guidance normally advises mitigation. The level varies and consists of the community description, construction duration and presence of tonal or impulsive noise.
Mobile sources	Mobile sources represent emission sources that are not stationary in nature. For example, on-road or off-road vehicles
Mode shift	Changes between modes of transport (e.g. motor vehicle, bicycle, public transit), typically used to refer to increase in the proportion of trips made using sustainable modes.
Multi-modal street network	Street network that supports several different modes of transportation (e.g., cycling, walking, driving).
Nighttime	Defined as the hours from 10 p.m. to 7 a.m..

Noise	Noise is considered unwanted sound
Noise-sensitive receptors	Noise levels are assessed at noise-sensitive locations. Noise-sensitive receptors typically include residences, schools, medical facilities, etc.
Noxious weed	Plant species, including seeds of that species, considered to be noxious by the British Columbia <i>Weed Control Act</i> .
Operations Environmental Management Plan	A document that will guide environmental management of the Project during the operations phase of the Project.
Other crime	Offences including prostitution, offensive weapons, causing a disturbance, and breach/bail violations.
Overhead catenary system	A system of overhead electrical wires that supply electricity to the light rail trains.
Permeable surface	Ground surface that enables surface water to filter into underlying soils and ground water.
Preliminary field reconnaissance (PFR)	An in-field study to assess the potential for archaeological sites in an area. They are often done as part of an AOA. PFRs do not require a <i>Heritage Conservation Act</i> permit.
Probable-case scenario	An event that is likely to precede an accident or malfunction scenario.
Property crime	Offences including theft, breaking and entering, burglary, auto theft, arson and vandalism.
Qualified Environmental Practitioners	Qualified and experienced environmental practitioners with an appropriate level of training and experience in their respective field, and in some cases, may hold professional designations (e.g., professional geoscientist, engineer, agrologist, or biologist).
Rail switch	A mechanical installation that enables light rail trains to transition from one set of rails to another.
Receptor	Stationary position at which noise levels are assessed
Remote Access to Archaeological Data (RAAD)	An online application maintained by the Archaeology Branch that provides users archaeological site information in British Columbia.
Review Area	Spatial boundary of review area for each review element.

Review Element	Environmental or socio-economic aspects being addressed in the review.
<i>Serious harm</i>	The death of fish or a permanent alteration to, or destruction of fish habitat of a spatial scale, duration, or intensity that fish cannot complete one or more life processes, such as being unable to rely upon such habitats for use as spawning grounds, or as nursery, rearing, or food supply areas, or as a migration corridor, or any other area.
Side-running LRT alignment:	Track panels located on outer lane of the roadway and not centered between lanes of alternating directions.
Sound level meter	Instrument used for acoustic measurements. Commonly hand-held instrument with a microphone
South of Fraser Sub-Region	Geographic area that includes the City of Surrey, City of Langley, Township of Langley, Corporation of Delta, City of White Rock and Tsawwassen First Nation.
Species at risk	Plant and wildlife species designated as Red- (Extirpated, Endangered, or Threatened) or, Blue-listed (of Special Concern; formerly Vulnerable) in British Columbia, or are designated as Endangered, Threatened, or Special Concern by either the federal <i>Species at Risk Act</i> or the Committee on the Status of Endangered Wildlife in Canada
Species of Management Concern	Plant and animal species at risk, invasive species, including noxious weeds
Stream	Defined under the <i>Water Sustainability Act</i> as: a natural watercourse or source of water supply, whether usually containing water or not, and a lake, river, creek, spring, ravine, swamp and gulch
Stream Flow	Total amount of water flowing in a watercourse
Table of Project Environmental Requirements	List of environmental-related requirements for the Project, including regulatory requirements and Project-specific commitments.
Tonal Noise	Characteristic of (acoustic) noise which can increase the potential noise effects. Tonality occurs in the noise emissions of most land based mobile equipment during the construction phases (e.g back up alarm). Tonal sound is sound characterized by a single frequency component or narrow-band components that emerge audibly from the total sound. The tonal characteristic of source noise can be dealt with

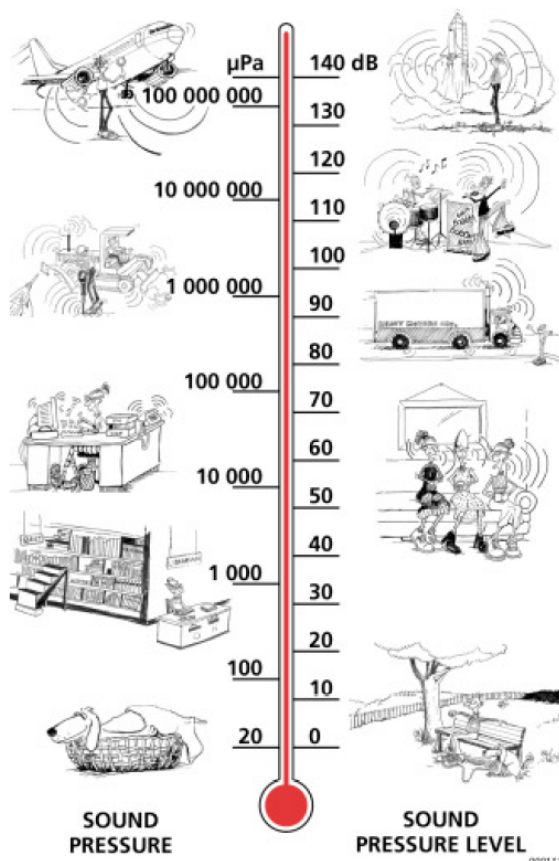


by adjustments in the Project’s equipment sound power level.

Turbidity

Cloudiness of a liquid, resulting from suspended particles.

Typical Sound Pressure Levels Examples  
(Bruel and Kjaer, 2000)



Violent crime

Offences including homicide, attempted murder, sexual assault, assault, robbery, abduction, criminal harassment, uttering threats, extortion, and other violent violations.

Volatile Organic Compounds

Carbon-containing (organic) compounds that readily evaporate into the air under ambient conditions. Many VOCs are of natural origin. Others may be potentially harmful to the environment, either directly or indirectly as a precursor to ground-level ozone and smog formation.

Worst-case scenario

An accident or malfunction scenario with a reasonable probability of occurring that has the highest risk to public safety or potential for injury.