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PQP FLASH CARDS

188+ key terminology flash cards!

BEYOND
SMART CITIES



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Above-grade wall

A wall that is above the finish grade and not in contact with the ground.



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Adaptive species

A plant species which has adapted to the local climate that is drought and/or saline tolerant.



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U-value (thermal transmittance):



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The heat transmission in unit time through a unit area of a material or construction and the boundary air films, induced by unit temperature difference between the environments on each side. The units of U are W/m^2K .



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Valuable asset



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A feature of ecological value, including healthy native trees or shrub.



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Variable Air Volume (VAV) system



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An HVAC system that controls the temperature within a space by varying the volumetric flow of heated or cooled supply air.



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Vegetated roof



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A roof that is partially or completely covered with plants and soil or a growing medium. Also known as a green roof.



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Vegetated wall



©Beyond Smart Cities Private Limited

A wall that is partially or completely covered with plants and a growing medium.



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Visible light transmittance (VL T)



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The percentage of visible light passing through a material relative to the total amount of light incident upon it.



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Volatile Organic Compound (VOC)



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An organic chemical which has a boiling point range below 250°C. Under normal conditions a VOC will significantly vaporize and enter the atmosphere. Many VOCs have significant health implications.



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Walkway



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A path/route intended for pedestrian use such as a concrete or asphalt surface or continuous blocks of pavers.



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Wastewater



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Water that has been adversely affected in quality by human activity. Wastewater is a source of potentially valuable resources including biosolids, nutrients and water .



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Water feature



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An artificial body of water such as a pool or fountain.



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Water model



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An analytical tool for understanding how much potable water is used in a building and to determine volumes of all demands and sources including potable and other potential sources of water, including graywater, recycled water and stormwater harvesting.



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Window area



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The total area of the window including the glazing, sash and frame. For doors where the glazed vision area is less than 50% of the door area, the window area is the glazed vision area. For all other doors, the window area is the door area.



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Admixture

A material other than water, aggregates, lime, or cement, used as an ingredient of concrete or mortar, and added immediately before or during the mixing process.



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Air leakage rate

The air flow rate required to pressurise a building to a stated pressure differential divided by the surface area of the building.



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Air tightness



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The resistance of the building envelope to inward or outward air leakage.



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Aggregate



©Beyond Smart Cities Private Limited

The particulate material used in construction including sand, gravel, crushed stone, slag, recycled concrete and geosynthetic aggregates.



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Albedo



©Beyond Smart Cities Private Limited

The amount of solar energy reflected
by a surface.



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American National Standards Institute (ANSI)



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The non-profit organisation that
coordinates and administers the U.S.
voluntary national standards in both
the private and public sectors.



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American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)



©Beyond Smart Cities Private Limited

The international organisation that establishes standards for the uniform testing and rating of heating, ventilation, air conditioning and refrigeration equipment. It also conducts related research, disseminates publications and provides continuing education to its members.



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Area of probable impact



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The extent of a physical area occupied by an environmental component that is likely to be impacted by at least one of the phases of the proposed project. The boundary of the area of probable impact is determined by measurements, previous studies, models or best professional judgment and may vary by environmental component. In simple terms the extent of the area outside of the project area that is likely to be directly or indirectly impacted by the proposed project.



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Asbestos



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A fibrous mineral formerly used for making incombustible or fireproof articles. The inhalation of asbestos fibres can cause serious illnesses, including malignant lung cancer, mesothelioma, asbestosis and gastrointestinal cancer.



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Audit



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A systematic process of objectively obtaining and assessing evidence, including physical inspections and verification.



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Ballast



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An electrical device for starting and regulating fluorescent and discharge lamps.



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Baseline building performance



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The annual energy consumption of a baseline building design as defined in ANSI/ASHRAE/IESNA Standard 90.1-2007.



Below-grade wall

The portion of a wall in the building envelope that is entirely below the finish grade and in contact with the ground.



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Benchmark

A standard against which something can be measured or judged.



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Blackwater

The wastewater from toilets, urinals, kitchen sinks and dishwashers.



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Building envelope

The elements of a building that separate conditioned spaces from the exterior.



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Building integrated photovoltaics



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Photovoltaics that replace conventional building elements such as the roof, façade or skylights.



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Building Log Book (BLB)



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A simple document providing the building owner/manager with easily understood information on how the building should be operated, maintained and serviced. It also allows ongoing building performance and major alterations to be recorded



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Building Management System (BMS)



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A computer based system with the capability to monitor, control and optimise the performance of building systems, controls and functions.



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Business As Usual (BAU)



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The practice of conducting business according to the status quo, with no attempt to assess new/additional needs, identify possibilities for improvement or implement change.



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Candela



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The base unit of luminous intensity i.e. the power emitted by a light source in a particular direction.



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Carbon emissions



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The release of carbon (or carbon dioxide) into the atmosphere.



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Carrying capacity



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The maximum number of organisms or amount of biomass that can be supported in a given area.



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Car sharing



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The shared use of a car by the driver and one or more passengers, usually for commuting.



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Central monitoring system

A central point for the storage and monitoring of information.



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Chromated Copper Arsenate (CCA)

A chemical wood preservative containing chromium, copper and arsenic.



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Climate change



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A change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.



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Clock time



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The artificial time used in everyday life to standardise time measurements. It allows people in difference locations to use the same time or to easily convert time from one location to another. Clock time differs from Solar Time, also known as local solar time, which is the time according to the position of the sun in the sky relative to one specific location on the ground. In solar time, the sun is always due south in the northern hemisphere at exactly noon.



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Coefficient of performance (COP) - cooling



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The ratio of the net cooling energy exported from the system to the total electric power used by the system.



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Co-generation



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The generation of both electricity and useful heat. Also known as combined heat and power (CHP).



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Color Rendering Index (CRI)



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A scale of 0 to 100 of the ability of a light source to reproduce the colors of various objects in comparison with an ideal or natural light source. The higher the CRI, the closer the color reproduction is to that of the ideal/natural light source.



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Commissioning



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The process of ensuring that newly constructed/installed systems (HVAC, plumbing, electrical, fire/life safety, building security etc) operate as designed and meet the performance requirements of the building occupant.



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Commissioning agent



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An individual with responsibility for co-ordinating and monitoring the commissioning process.



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Compensation



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The measures taken to make up for the loss of, or permanent damage to, biological resources through the provision of replacement areas. Any replacement area should be similar to or, with appropriate management, have the ability to reproduce the ecological functions and conditions of those biological resources



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Compost

A mixture of decomposed organic matter used to improve soil structure and provide nutrients.



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Computational Fluid Dynamics (CFD)

A branch of fluid mechanics that uses numerical methods and algorithms to analyse and solve problems that involve fluid flows.



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Condensate



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The product of condensation.



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Condensation



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The change of a gas or vapor into a liquid, either by being cooled or being subjected to increased pressure. A common occurrence is the condensation of atmospheric moisture on a cold surface.



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Conduction



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The transfer of thermal energy through a material.



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Connectivity



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A measure of the functional availability of the habitats needed for a particular species to move through a given area.



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Construction waste



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The unwanted material generated during construction, including demolition waste.



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Cutoff luminaire



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A luminaire that controls the amount of uplight. Luminaires are classified as full cutoff, cutoff, semi-cutoff or non-cutoff according to the most recent adopted criteria of the Illuminating Engineering Society of North America (IESNA).



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Desalinization



©Beyond Smart Cities Private Limited

The removal of salt from water.



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Development Review Process



©Beyond Smart Cities Private Limited

The Urban Planning Council's process
for reviewing development proposals.



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Distribution system



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The systems, components and mechanisms (such as ducts, pipes, and wires) conveying substances or energy from a source to the point of use. The distribution system includes such auxiliary equipment as fans, pumps and transformers and their respective control systems.

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District cooling



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The centralized production and distribution of cooling energy.

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Dynamic Simulation Modeling (DSM)



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Environmental tobacco smoke (ETS)



©Beyond Smart Cities Private Limited

Environmental tobacco smoke (ETS)



©Beyond Smart Cities Private Limited

The modeling of a building that
simulates the energy inputs and
outputs for different types of
buildings over time.



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Energy conservation measures



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The modifications or installations to the building design in order to reduce energy consumption. Such measures include external shading, orientation, system efficiencies, on-site renewable technologies etc.



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Energy rate



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The cost of a unit of energy or power.



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Environmental component



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An attribute or constituent of the environment (i.e. air quality, marine waters, waste management, geology, seismicity, soil, groundwater, marine ecology, terrestrial ecology, noise, traffic, socio-economic) that may be impacted by the proposed project.



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Environmental design



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The process of addressing surrounding environmental parameters when devising plans, programmes, policies, buildings or products. Environmental design in the traditional sense develops physical environments to meet one or more aesthetic or day-to-day functional needs, or to create a specific sort of experience.



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Environmental impact



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The positive or negative impact that occurs to an environmental component as a result of the proposed project. This impact can be directly or indirectly caused by the project's different phases (i.e. construction, operation and decommissioning).



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Environmental Impact Assessment (EIA)



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The assessment of the possible impacts (both positive and negative) that a proposed development may have on the environment, covering natural, social and economic aspects.



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Equinox



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Either of the two times of the year when the sun crosses the plane of the earth's equator and day and night are of equal length.



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Evapotranspiration



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The transport of water into the atmosphere from surfaces, including soil and vegetation.



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Façade



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The exterior wall of a building exposed to public view or that wall viewed by persons not within the building. The portion of any exterior elevation of a building extending vertically from the grade to the top of a parapet wall or eave, and horizontally across the entire width of the building elevation.



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Fan Coil Unit (FCU)



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A unit that provides cooling and/or heating air as part of a comfort air conditioning system. An FCU uses heated or chilled water and supplies air via one or more electrically driven fans.



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Fire suppression system



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The system within a building that discharges inert gases or chemical agents to control/extinguish a fire.



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Floor-to-floor height



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The vertical distance measured from the finished floor of one storey to the finished floor of the above or below storey.



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Formaldehyde



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A simple, highly reactive hydrocarbon that is used as a fixative in the pathology laboratory, a fumigant, and in the manufacture of foam insulation, cosmetics, drugs, clothing and furniture. It is also a major toxic component of photochemical smog. Formaldehyde is a strong allergen.



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Fossil fuel



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A fuel manufactured from a hydrocarbon deposit such as petroleum, coal or natural gas derived from living matter of a previous geologic time.



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General contractor



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The contractor with the main responsibility for performing/supervising the construction of a project. The general contractor hires all the subcontractors and suppliers for the project.



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Geothermal



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The heating and/or cooling potential of the ground.



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Glare



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The result of excessive contrast between bright and dark areas in the field of view, causing discomfort or reducing the ability to discern detail.



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Global Warming Potential (GWP)



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An indicator that reflects the relative effect of a greenhouse gas in terms of climate change considering a fixed time period, such as 100 years (GWP100). The GWPs for different emissions can then be added together to give one single indicator that expresses the overall contribution to climate change of these emissions.



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Graywater

The wastewater from uses such as showers, laundry, sinks, fire system tests and cooling tower drain-down water



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Green infrastructure

A strategically planned and managed network of wilderness, parks, greenways, conservation easements and working lands with conservation value that supports native species, maintains natural ecological processes, sustains air and water resources and contributes to the health and quality of life for communities and people.



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Greenfield



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Previously undeveloped land in a city or rural area, currently used for agriculture, landscape design or left to nature.



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Greenhouse gas (GHG)



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A gas which absorb infrared radiation (heat) and contributes to the greenhouse effect (examples include water vapour, carbon dioxide, methane etc).



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Gross Floor Area (GFA)



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The sum of the floor areas of the spaces within a building, including basements, mezzanines and intermediate floors, and penthouses with an internal height of 2.3m or greater. It is measured from the exterior faces of the exterior walls or from the centreline of walls separating buildings. It excludes covered walkways, porches, pipe trenches, exterior terraces or steps, chimneys, roof overhangs and similar features.



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Groundwater



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The water that occurs below the surface of the earth where it occupies spaces in soils or geological strata.



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Habitat



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A place in which a particular plant or animal lives. Often used in the wider sense referring to major assemblages of plants and animals found together.



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Habitat creation



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The establishment of an ecosystem on land that did not previously support that ecosystem, or on severely altered sites.



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Hazardous material/waste



©Beyond Smart Cities Private Limited

A material that can cause harm to people, other living organisms or the environment.



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Heat rejection



©Beyond Smart Cities Private Limited

The removal of heat from a system, commonly water based.



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Heating, Ventilation and Air Conditioning (HVAC) system



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The equipment, distribution systems
and terminals that provide heating,
ventilating or air conditioning to a
building or portion of a building.



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High-frequency electronic ballast



©Beyond Smart Cities Private Limited

A ballast tha operates at a frequency
greater than 20 kHz and typically
around 30kHz.



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Illuminance



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The total luminous flux incident on a surface, per unit area.



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Incandescent lamp



©Beyond Smart Cities Private Limited

A lamp in which light is produced by a filament heated to incandescence by an electric current.



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Indoor Environmental Quality (IEQ)



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The quality of the internal environment in relation to airborne contaminants, thermal comfort, lighting, acoustics etc.



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Infiltration - air



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The uncontrolled leakage of air through cracks and gaps in any building element and around windows and doors of a building. Infiltration is caused by pressure differences across these elements due to wind, inside and outside temperature differences and imbalance between supply and exhaust air systems.



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Infiltration - water



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The downward movement of water through soil.



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Infiltration rate — water



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The rate of water entry into the soil expressed as a depth of water per unit of time (mm/hour).



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Infrared radiation



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The energy in the region of the electromagnetic radiation spectrum at wavelengths longer than those of visible light but shorter than those of radio waves.



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Key Performance Indicator (KPI)



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An indicator set in a key area to measure performance.



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Landscaping



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The planting, configuration and maintenance of trees, ground cover, shrubbery, decorative natural and structural features (walls, fences, hedges, trellises, fountains, sculptures), earth patterning and bedding materials, and other similar site improvements that serve an aesthetic or functional purpose.



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Legionnaires disease



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A respiratory disease caused by inhaling *Legionella* bacteria either in the form of contaminated water droplets (aerosols) or in droplet nuclei (after water has evaporated). Fatal in approximately 12% of reported cases.



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Life Cycle Cost (LCC) analysis



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An analysis of building impacts covering the consecutive and interlinked stages of a constructed building, from raw material acquisition to the final disposal.



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Life span



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The length of time an object, material or organism is expected to survive.



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Light pollution



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The adverse effect of artificial light, including sky glow, glare, light trespass, light clutter, decreased visibility at night and energy waste.



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Living area



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Any family room in a residential unit, such as a living room, dining room, majlis rooms, playroom, TV room, home theatre room, study, party rooms.



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Load bearing wall



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A wall that supports other elements of a building in addition to its own weight.



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Lumen



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A unit of luminous flux equal to the amount of light given out through a solid angle of one steradian by a point source of one candela intensity radiating uniformly in all directions.



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Microclimate



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The localised climate conditions within an urban area or neighbourhood.



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Minimum landscaped area



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The minimum area of landscaping as defined by development type and location within the Abu Dhabi Development Code.



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Mitigation



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The measures taken to avoid or reduce negative impacts.



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Mixed mode ventilation



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The combination of natural ventilation and mechanical ventilation and/or cooling to ventilate a space. In the context of this document and the UAE climate, this refers to changeover mixed mode design and operation. This implies a change of ventilation and cooling 'mode' from fully sealed in the hotter months, to one of natural ventilation through operable windows in cooler months.



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Mixed-use development



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A development that includes more than occupancy type - such as residential, commercial, industrial, public or semi-public - within the same building, project or site . The most common examples are a project with both commercial and residential uses, or commercial and industrial uses.



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Nadir



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The reference direction directly below a luminaire, or "straight down" (0 degree angle).



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Native species



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An indigenous species living naturally within a given area.



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Non-renewable energy



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The energy derived from a fossil fuel source.



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Operation and Maintenance Manual (OMM)



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A document containing instructions
for the operation and maintenance of
systems and components within a
building.



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Occupied area



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Any internal space intended for
sedentary occupancy.



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Open area



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The area of opening through which air exchange occurs between indoors and outdoors. It is not the same as the whole window area (glass and frame) and is typically much smaller and depends on the opening style of the window.



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Operational waste



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The waste produced as a result of operating/running a building e.g. office waste, landscaping waste, food waste.



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Organic waste



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The carbon-containing waste derived from animal and plant materials.



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Outdoor/outside air



©Beyond Smart Cities Private Limited

The air that is outside the building envelope or is taken from outside the building that has not been previously circulated through the building.



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Ozone Depletion Potential (ODP)



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The relative amount of degradation to the ozone layer a chemical compound can cause. The ODP of CFC-11 is 1 and the ODPs of other compounds are calculated relative to this.



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Permeable paving



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Paving designed to allow water to pass through its surface using porous asphalt or concrete or using interlocking concrete permeable pavers or open grid pavers.



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Phase I habitat survey



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A field survey technique which provides a relatively rapid method to record semi- natural and natural vegetation and other wildlife habitats, designed to cover large areas relatively rapidly.



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Photovoltaics



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Cells that produce a voltage when exposed to radiant energy (especially light). The main application is the conversion of solar radiation to usable energy.



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Plan 2030



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The plan which has been designed to help Abu Dhabi filter all planning decisions through environmental, social and economic development criteria. The full title is the Abu Dhabi 2030 Urban Structure Framework Plan.



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Predicted Mean Vote (PMV)



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A thermal scale from -3 (cold) to +3 (hot).



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Predicted Percentage Dissatisfied (PPD)



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The percentage of a hypothetical sample population who will be dissatisfied (uncomfortable) in a given environment. As the PMV moves away from neutral ($PMV = 0$) either direction, the PPD increases.



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Preliminary Environmental Review (PER)



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A review to identify, at the earliest possible stage, the potential environmental consequences associated with a proposed development.



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Previously developed land



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Any land that is, or was, occupied by a permanent structure including the land up to the plot boundary of the permanent structure and any associated fixed surface infrastructure. It excludes any land occupied by agriculture or forestry and any parks or recreational grounds.



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Priority habitats



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The habitats identified in Abu Dhabi Emirate which are of exceptional value and are highly threatened, including Intertidal Mudflats, Mangroves, Vegetated Sandy Beaches, Marine (seagrass, coral), Wadis, Sand Sheets and Low Dunes, Interdunal Plains and High Dunes, Alluvial Plains and Jebels. Refer to Brown and Boer, 2004 for detailed habitat types.



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Priority species



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A protected species (flora or fauna) or species determined to be critically endangered, endangered, vulnerable or near threatened (as defined by the International Union for Conservation of Nature, IUCN and/or UAE Red Data list).



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Projected shade



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The shade projected onto a horizontal or vertical surface by another element including buildings or parts of buildings, shade devices or structures.



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Project site area



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The physical area within which activities of the proposed project will take place (the boundary of the project area is defined by the titled property boundary).



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Proposed building performance



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The annual energy consumption of a proposed building design, as defined in ANSI/ASHRAE/IESNA Standard 90.1-2007.



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Public Open Space



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Parks, plazas and similar open space areas that are reserved and dedicated for public access and use. This includes publicly accessible open space that is located on privately owned land.



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Rapidly renewable material



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A material or product made from plants that are typically harvested within a ten- year cycle or shorter .



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Receptacle and process loads



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All miscellaneous and plug loads
within a building e.g. office
equipment, kitchen equipment,
elevators etc.



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Recyclable material



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Any raw or processed material than
can be recycled.



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Recycled water



©Beyond Smart Cities Private Limited

The water discharged from a wastewater treatment system, treated to reduce the concentration of any substance or organism that may be detrimental to public health or the environment and made

for reuse

Recycling



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The processing of previously used materials to create new products.



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Re-commissioning



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The process through which buildings are commissioned at some time after their initial completion, occupancy and commissioning to ensure that building systems are still functioning as originally planned, constructed and delivered.



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Refrigerant leak detection system



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A sensing system that detects refrigerant leaks. The system may be aspirated or have multiple sensors linked to a central alarm unit or BMS.



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Relative humidity



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The amount of water vapor that exists in a gaseous mixture of air and water vapor, expressed as a percentage.



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Remediation



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In the context of contaminated land, remediation prevents contaminated land from harming the environment and restores the land to safe and usable conditions.



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Renewable energy



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The energy derived from a renewable source e.g. solar, wind, tidal.



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Renewable Energy Certificate (REC)



©Beyond Smart Cities Private Limited

A tradable energy commodity that represents proof that a unit of energy was generated from an eligible renewable source.



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Residential unit



©Beyond Smart Cities Private Limited

A single unit providing independent living facilities for one or more persons, including permanent provisions for living, sleeping, cooking and sanitation.



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Restoration



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The altering of an area in such a way as to re-establish an ecosystem's structure and function, usually bringing it back to its original (pre-disturbance) functioning.



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Roof



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The upper portion of the building envelope that is horizontal or tilted at an angle of less than 60° from horizontal.



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Runoff



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The water that is not absorbed by the soil or landscape to which it is applied and therefore flows from the area. For example, runoff may result from water that is applied at too great a rate (application rate exceeds infiltration rate) or where there is a severe slope.



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Safety lighting



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The lighting provided to enhance occupant safety, often used outside of daylight hours to provide sufficient light levels to enable safe use of areas such as main entrances, pathways, steps and car parks.



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Salvage



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To save discarded or damaged material for further use.



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Security lighting

The lighting provided to deter intruders and protect property.



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Service water heating

The heating of water for domestic or commercial purposes other than space heating and process requirements.



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Setpoint



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The point at which the desired temperature of the heated or cooled space is set.



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Significant asset



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An asset which is of significant importance (internationally, nationally, regionally and/or locally), including:

- Priority Habitats;
- Any other habitat identified as significant through a Development Review Process, the Coastal Development Guidelines, an Environmental Impact Assessment, a Preliminary Environmental Review or a Strategic Environmental Assessment; and
- Priority species.



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Site boundary



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The line that indicates the extent of the project/development site.



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Smart meter



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An advanced meter that identifies consumption in more detail than a conventional meter. Smart metering is designed to provide utility customers with information on a real time basis about their domestic energy consumption. This may include data on how much gas and electricity they are consuming, the cost and the impact of their consumption on greenhouse gas emissions.



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Solar Heat Gain Coefficient (SHGC)



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The ratio of the solar heat gain entering a space through a transparent/translucent element to the incident solar radiation on the element. Solar heat gain includes directly transmitted solar heat and absorbed solar radiation, which is then reradiated, conducted or convected into the space.



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Solar radiation



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The thermal energy from the sun, including the infrared, visible and ultraviolet wavelengths.



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Solar Reflectance Index (SRI)



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The measure of a material's ability to reflect solar heat on a scale of 0 to 100. A standard black material has an SRI of 0 and a standard white material has an SRI of 100.



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Solar time



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The time according to the position of the sun in the sky relative to one specific location on the ground. In solar time, the sun is always due south in Abu Dhabi at exactly noon. This means that someone a few miles east or west of you will realise a slightly different solar time than you, although clock time would be the same. Also known as local solar time.



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Stormwater



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The excess water created during precipitation events.



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Street



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A public or private right-of-way, other than a major or secondary highway or alley, whose function is to carry vehicular traffic or provide vehicular access to abutting property.



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Sub-meter



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A utility meter that allows for the monitoring of usage on a portion of a distribution system past a main meter.



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Suitably qualified professional



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- An individual with:
- a degree in a relevant subject;
 - a minimum of five years directly relevant work experience; and
 - a proven track record on working on similar projects in the region.
- The Environment Agency Abu Dhabi (www.ead.ae) holds a list of consultants carrying out a range of environmental services within the Emirate of Abu Dhabi. For other consultants, appropriate evidence must be submitted to demonstrate meeting the criteria above.



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Summer solstice



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The time at which the sun is at its northernmost point in the sky (southernmost point in the southern hemisphere), appearing at noon at its highest altitude above the horizon. It occurs on 21st June (22nd December in the southern hemisphere).



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Supplementary Cementing Material (SCM)



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A material that is added to concrete to make concrete mixtures more economical, reduce permeability, increase strength or influence other concrete properties. Typical examples are natural pozzolans, fly ash, ground granulated blast-furnace slag and silica fume.



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Thermal zoning



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The logical sub-divisions of building spaces based on anticipated thermal load and the need for occupant control. Consideration should be given to variations in thermal load at the perimeter of the building resulting from internal gains, façade orientation, passive shading, shading from adjacent buildings and façade design variations such as glazing percentage, glazing type and insulation thermal performance.



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Thermostatic controller



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An automatic control device used to maintain temperature at a fixed or adjustable setpoint.



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Total Volatile Organic Compound (TVOC)



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The total concentration of volatile organic compounds (see definition) in a given sample.



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Trafficked walkway



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A pedestrian walkway or any dedicated pedestrian route through courtyards inside the site boundary.



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Transit station



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A public transport station such as a railway station or metro station.



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Transit stop



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A dedicated public bus or tram stop.



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