

DEFINITIONS AND ABBREVIATIONS

Annual Exceedance Probability or AEP - the Annual Exceedance Probability is the chance or probability of a natural hazard event (usually a rainfall or flooding event) occurring annually and is usually expressed as a percentage. Bigger rainfall events occur (are exceeded) less often and will therefore have a lesser annual probability.

Example 1: 2% exceedance probability rainfall event: A 2% Annual Exceedance Probability rainfall event has a 2% chance of occurring in a year, so once in every 50 years.

Example 2: 20% exceedance probability rainfall event: A 20% Annual Exceedance Probability rainfall event has a 20% chance of occurring in a year, so once in every 5 years.

Table:

| Exceedance Probability (AEP) | Potential Frequency | Flooding Event Size |
|------------------------------|---------------------|--|
| 1% AEP | 1 in 100 Years | Greater Rainfall event  Lesser Rainfall Event |
| 2% AEP | 1 in 50 Years | |
| 5% AEP | 1 in 20 Years | |
| 10% AEP | 1 in 10 Years | |
| 20% AEP | 1 in 5 Years | |
| 50% AEP | 1 in 2 Years | |
| 100% AEP | Happens Every Year | |

Aquifer - A sub-surface zone or formation of rock or soil containing a body of groundwater

Attenuation - Reduction of peak flow and increased duration of a flow event.

Attenuation Storage - Volume used to store runoff during extreme rainfall events attenuating flows by limiting flow rates out of it. Comes into use once the inflow is greater than the controlled outflow.

Barrage - is an artificial barrier across a river or estuary to prevent flooding, aid irrigation or navigation, or to generate electricity by tidal power.

Block Paving - Pre-cast concrete or clay brick sized flexible modular paving system.

Brownfield site - A site that has been previously developed

Catchment - A drainage basin or catchment basin is an extent or an area of land where surface water from rain, melting snow, or ice converges to a single point at a lower elevation, usually the exit of the basin, where the waters join another waterbody, such as a river, lake, reservoir, estuary, wetland, sea, or ocean. For example, a tributary stream of a brook that joins a small river is tributary of a larger river, which is thus part of a series of successively smaller area but higher elevation drainage basins.

Catchpit - A small chamber incorporating a sediment collection sump which the runoff flows through.

Climate Change - Climate change refers to any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer).

Combined Sewers - A sewer designed to carry foul sewage and surface runoff in the same pipe.

Consent - Permission (usually conditional) granted by the environmental regulator; usually associated with the discharge of flow, or potentially polluting flow, to a watercourse or into the ground

Control Structure – A structure to control the volume or rate of flow of water through or over it.

Conventional Drainage - The traditional method of draining surface water using subsurface pipes and storage tanks.

Conveyance - Movement of water from one location to another.

Critical Duration Event - The duration of rainfall event likely to cause the highest peak flows at a particular location, for a specified return period event.

Culvert - A covered channel or pipe designed to prevent the obstruction of a watercourse or drainage path by an artificial construction.

Dam - barrier constructed to hold back water and raise its level, forming a reservoir used to generate electricity or as a water supply.

Design Storm - A synthetic rainfall event of a specific profile, intensity and period of time for a given duration and return period; derived by statistics and recorded rainfall events for a specific location.

Designing for Exceedance - An approach that aims to manage exceedance flows during rainfall events, e.g. the use of car parks during extreme events.

Discharge - The flow rate of liquid passing through a conduit.

Drainage - is the natural or artificial removal of surface and sub-surface water from an area. Many agricultural soils need drainage to improve production or to manage water supplies.

Duration - The time period over which an event occurs or has an impact.

Event (rainfall) - Single occurrence of a rainfall period before and after which there is a sufficient dry period for runoff and discharge from the drainage system to cease.

Exceedance - An event which has a result which exceeds a set target level, or in the case of drainage networks, a flow which exceeds the capacity of the sewers, causing surcharging and/or flooding.

Exceedance flow - Excess flow that appears on the surface once the conveyance capacity of the minor system is exceeded.

Exceedance flow route /path - Design and consideration of above-ground areas that act as pathways permitting water to run safely over land to minimise the adverse effect of flooding on people and property. This is required when the design capacity of the drainage system (SuDS or traditional drainage) has been exceeded.

Flash Flood - A flash flood is a rapid flooding of low-lying areas in less than six hours, which is caused by intense rainfall from a thunderstorm or several thunderstorms. Flash floods can also occur from the collapse of a man-made structure or ice dam.

First Flush -The initial runoff from a site or catchment following the start of a rainfall event. As runoff travels over a catchment it will pick up or dissolve pollutants and the "first flush" portion of the flow may be the most contaminated as a result. This is especially the case in small or more uniform catchments; however, in larger or more complex catchments pollution wash-off may contaminate runoff throughout a rainfall event.

Flood Frequency - Refers to the probability (in percent) that a flood will occur in a given year.

Based on a 100 year example:

Refers to a flood level that has a specified percent chance of being equalled or exceeded in any given year. For example, a 100-year flood occurs on average once every 100 years and thus has a 1-percent chance of occurring in a given year.

Flood routing - Design and consideration of above-ground areas that act as pathways permitting water to run safely over land to minimise the adverse effect of flooding. This is required when the design capacity of the drainage system has been exceeded

Floodplain - A floodplain is an area of land over which river or sea water flows or is stored during a flood. Floodplains usually extend beyond the land immediately next to a watercourse. There is often pressure to build on them. However, buildings or other artificial objects can obstruct floodplains, block the flow of water and make flooding worse.

Flood Risk Assessment (FRA) - A Flood Risk Assessment (FRA) is a report required in support of any planning application for any developable area of 1ha or more or any developable area in Flood Zones 2 and 3. FRA identifies the level of flood risk to your property or site. This will enable you to identify the measures (if any) that are necessary to make your property or site safer. It will also enable the LPA to assess to what extent that risk is a consideration when determining your planning application.

Flood Zone (s) - Flood Zones refer to the probability of river and sea flooding, ignoring the presence of defences. They are shown on the Environment Agency's Flood Map for Planning (Rivers and Sea •), available on the Environment Agency's web site.

More info can be found: <http://planningguidance.communities.gov.uk/blog/guidance/flood-risk-and-coastal-change/flood-zone-and-flood-risk-tables/table-1-flood-zones/>

Flow Control Device - A device used for the control of surface water from an attenuation facility, e.g. a weir.

Foul Drainage - The infrastructure that drains the water and sewage that is discharged from within houses.

Freeboard - Distance between the design water level and the top of a structure, provided as a precautionary safety measure against early system failure.

Green Infrastructure - A strategically planned and delivered network of natural and manmade green and blue spaces that sustain natural processes. It is design and managed as a multifunctional resource capable of delivering a wide range of environmental and quality of life benefits for society.

Greenfield Runoff - The runoff that would occur from the site if its undeveloped and undisturbed state. Greenfield runoff characteristics are described by peak flow and volumes of runoff for rainfall events of specified duration and return period (frequency of occurrence).

Highway drain - A conduit draining the highway on a highway maintainable at the public expense it is vested in the highway authority.

Impermeable / Impervious - Will not allow water (or any liquid) to pass through it.

Interception Storage - The capture and infiltration of small rainfall events up to about 5mm. normally prevents surface water from the runoff reaching the drainage system.

Lateral drain -

a) That part of a drain which runs from the curtilage of a building (or buildings or yards within the same curtilage) to the sewer with which the drain communicates or is to communicate; or

(b) (if different and the context so requires) the part of a drain identified in a declaration of vesting made under section 102 or in an agreement made under section 104 of the Water Industry Act 1991.

Local Development Framework (LDF) - A non-statutory term used to describe a folder of documents that includes all the local planning authority's local development documents (LDDs). The LDF will comprise the statement of community involvement, the local development scheme and the annual monitoring report.

Long Term Storage - Provided to allow volumetric runoff control during extreme rainfall by discharging water very slowly during and after the storm event.

Main River - Main rivers are usually larger streams and rivers, but some of them are smaller watercourses of local significance. In England Defra decides which watercourses are the main rivers, and the Welsh Government does this in Wales. Main rivers are marked on an official document called the main river map. Environment Agency local offices have copies of these maps. Main rivers can include any structure that controls or regulates the flow of water in, into or out of the channel.

Management Train- The management of surface water runoff in stages as it drains from a site (see SuDS Management Train).

Mean Annual Flood - Referred to as QBAR, or the mean annual flood, is the value of the average annual flood event recorded in a river. This flow rate is used to provide a measure of the green-field runoff performance of a site in its natural state to enable flow rate criteria to be set for post development surface water discharges for various return periods.

Off-Line - A conveyance or storage component which bypasses the main conveyance route for the drainage system.

On-Line - A conveyance or storage component which forms part of the main conveyance route for the drainage system.

Ordinary Watercourse - An 'ordinary watercourse' is a watercourse that is not part of a main river and includes rivers, streams, ditches, drains, cuts, culverts, dikes, sluices, sewers (other than public sewers within the meaning of the Water Industry Act 1991) and passages, through which water flows.

Orifice Plate - Structure with a fixed aperture to control the flow of water.

Outfall - The flow of excess water from a structure when its capacity is exceeded.

Overland flow - The flow of water over the surface from rainfall runoff before it enters the drainage system, or from excess flow passing out of a drainage component that is full.

Peak Flow - The maximum volume of water flowing in a watercourse or sewer over a certain period of time following a rainfall event.

Peak green-field runoff rate - Peak rate of runoff from the development site in its naturally vegetated state before any previous development.

Peak previously-developed runoff rate - Peak rate of runoff from the development site on previously developed land in its previously-developed state taking into account any known surface water drainage system.

Penstock - A sliding plate which moves vertically to vary the size of an aperture (or close it completely).

Percolation - The passing of water (or other liquid) through a porous substance or small holes (e.g. soil or geotextile fabric).

Permeability - A measure of the ease with which a fluid can flow through a porous medium. It depends on the physical properties of the medium, for example grain size, porosity, and pore shape.

Prevention - Site design and management to stop or reduce the occurrence of pollution of impermeable surfaces and to reduce the volume of runoff by reducing impermeable areas.

Previously Developed Land - Land which is or was occupied by a permanent structure, including the curtilage of the developed land and any associated fixed surface infrastructure. The definition of developed land includes defence buildings, but excludes:

- Land that is or has been occupied by agricultural buildings.
- Land that has been developed for minerals extraction or waste disposal by landfill purposes where provision for restoration has been made through development management procedures.
- Land in built-up areas such as private residential gardens, parks, recreation grounds and allotments, which although it may feature paths, pavilions and other buildings, has not been previously developed.
- Land that was previously-developed but where the remains of the permanent structure or fixed surface structure have blended into the landscape in the process of time (to the extent that it can reasonably be considered as part of the natural surroundings).
- Where development takes place on land which was previously partially developed, a pro-rata approach should be taken.

Probability - The estimated likelihood of a storm event e.g. a 1 in 100 year flood event is one that is expected to be equalled or exceeded once every 100 years; it also has a 1% chance of occurring in any one year.

Rainfall event - A single occurrence of rainfall before and after which there is a dry period that is sufficient to allow its effect on the drainage system to be defined.

Sewer - A pipe or channel taking domestic foul and/or surface water from buildings and associated paths and hard-standings from two or more curtilages and having a proper outfall.

Sewerage Undertaker - This is a collective term relating to the statutory undertaking of water companies that are responsible for sewerage and sewage disposal including surface water from roofs and yards of premises.

Sluice Gate – A sliding gate or other device for controlling the flow of water, especially one in a lock gate,

Source Control - The control of runoff at or near its source.

Storm event - Events occurring between 1 in 1 year (100% probability) and 1 in 30 year return period (3.3% probability). These events are typically what urban drainage systems (below ground) are designed up to, and which flooding occurs.

Surface flood pathways - Routes in which exceedance flows are conveyed on the ground.

Urban Creep – A term describing the conversion of permeable surfaces to impermeable over time e.g. surfacing of front gardens to provide additional parking spaces, extensions to existing buildings, creation of large patio areas.

Water Table - The point where the surface of groundwater can be detected. The water table may change with the seasons and the annual rainfall.

Watercourse - A term including all rivers, streams, ditches, drains, cuts, culverts, dykes, sluices, and passages through which water flows.

Water Framework Directive (WFD) – A European Law that provides a framework for the protection of the water environment including rivers, lakes, estuaries and groundwater.

1 in 100 year flood event

Many people literally assume it means this event “can only” happen every 100 years (in the case of a 100-year event). It is a statistical way of expressing the probability of something happening in any given year. A “100 year” storm event has a one in one hundred or 1% chance of happening in any given year. The 100 year flood has a one percent chance of being equalled or exceeded during any given year. It can also be termed the "one percent "flood since this relates the event to an annual time period instead of a 100 year time period. Sometimes it is easier for people to relate to the one year time interval than the 100 year interval. As the term indicates, the 100 year flood is not an event that occurs frequently. It is relatively rare. If projected accurately, 100 year floods will rarely be experienced. It should be noted that the majority of floods consist of lesser frequency events such as one year, five year, or ten year floods. It is never the case that an area experiences either no flooding or only 100 year flooding.

The term "100-year storm" is used to define a rainfall event that statistically has this same 1-percent chance of occurring. In other words, over the course of 1 million years, these events would be expected to occur 10,000 times. But, just because it rained 100 mm in one day last year doesn't mean it can't rain 100 mm in one day again this year.