

Glossary of Terms

Annual Average Damage (AAD)

This is a statistical value which takes into account all the flood damages that would occur over a very long period of time and expresses that damage as an average over one year. We can use this standardised measure of flood damage to assess change within a given location, or make comparisons between different areas. Estimation of the average annual damage provides a basis for comparing the effectiveness of different floodplain management measures.

Annual Exceedance Probability (AEP)

This is the likelihood of a particular flood event occurring over a period of one year, expressed as a percentage. For example if a flood has a 1% AEP, there is a 100 to 1 chance of this magnitude of flood event occurring in any one year. This can also be expressed as a 1 in 100 year return period.

0.1% AEP = 1 in 1000 year return period (Flood Zone 2)

0.5% = 1 in 200 year return period

1% AEP = 1 in 100 year return period (Flood Zone 3)

10% AEP = 1 in 10 year return period

20% AEP = 1 in 5 year return period

Appraisal

The process of defining objectives, examining options and evaluating costs, benefits, risks, opportunities and uncertainties before a decision is made.

Aquifer

A geological formation, group of formations or part of a formation, that can store and transmit water in significant quantities.

Area of Outstanding Natural Beauty (AONB)

Areas of Outstanding Natural Beauty (AONBs) were formally designated under the National Parks and Access to the Countryside Act (1949), to protect areas of the countryside of high scenic quality that cannot be selected for National Park status due to their lack of opportunities for outdoor recreation (an essential objective of National Parks). The Countryside Agency is responsible for designating AONBs and advising on policies for their protection. Further information can be found at: <http://www.aonb.org.uk>

Attenuation

The process of holding water back within the catchment during a flood event. This slows down the rate of drainage from the catchment and reduces peak flows downstream.

Baseline

Our baseline scenario is the 1% AEP fluvial flood event (the Flood Zone 3 extent).

Basin

The entire tract of land drained by a river catchment and its tributaries

Biodiversity Action Plan (BAP)

The UK Biodiversity Action Plan was launched in 1994 in response to the conference on biological diversity in Rio de Janeiro (1992). It contains action plans for 391 species and 45 habitats. As well as having national priorities and targets, action was also taken at a local level. Today there are 162 Local Biodiversity Action Plans (LBAPs) in England, Scotland and Wales. Habitat Action Plans (HAPs) form part of the UK Biodiversity Action Plan. They are broad habitat statements that provide summary descriptions of 28 natural, semi-natural and urban habitats and the current issues affecting the habitat and broad policies to address them. Each broad habitat area has a number of priority habitats associated with it which have their own, more detailed action plans. Further information can be found at: www.ukbap.org.uk

Birds directive

European Community Directive (79/409/EEC) on the conservation of wild birds. Implemented in the UK as the Conservation (Natural Habitats, etc.) Regulations 1994 and known as the 'Birds Directive'. Further information can be found at:

http://www.hmso.gov.uk/si/si1994/Uksi_19942716_en_1.htm

Blue Ribbon Network

The London Plan identifies a Blue Ribbon Network in London that includes the river Thames and its tributaries, canals and open waterbodies such as reservoirs and lakes. Further information can be found at: http://www.london.gov.uk/mayor/strategies/sds/london_plan_download.jsp

Broad Scale Model (BSM)

A model developed to test broad flood risk management options at a regional scale and to gauge sensitivity to scenario changes. The model was run for two design events, the 1% AEP and 0.1% AEP flows for both the Thames and Lee basins.

Brownfield

Land that was developed in the past and is now vacant or derelict.

Catchment

The area drained by a particular river. A surface water catchment is the area defined by the highest boundary between two catchments whilst a groundwater catchment is the area that contributes to the groundwater component of the river flow.

Catchment Flood Management Plan (CFMP)

CFMP are a large-scale strategic planning framework for the integrated management of flood risks to people and the developed and natural environment in a sustainable manner.

Climate Change

A regional change in temperature and weather patterns. Current science indicates a link between climate change over the last century and human activity, specifically the burning of fossil fuels.

Common agriculture Policy (CAP)

A policy developed to regulate production, trade and processing of agricultural products throughout the EU¹.

Connectivity

The ability to demonstrate that impacts in one place are significantly dependent upon events or changes in another place.

Consequence

An impact such as economic, social or environmental damage/improvement. May be expressed quantitatively (e.g. monetary value), by category (e.g. High, Medium, Low) or descriptively.

Conveyance

Conveyance is a measure of how well a channel or structure, such as a bridge or culvert, allows water to pass through. It depends on the physical characteristics of the channel or structure, including its size, shape, how rough its surface is, and how twisty it is.

Europa 2004 Common agricultural policy: beginnings to the present day
<http://europa.eu.int/scadplus/leg/en/lvb/l04000.htm> (last update 21/10/04)

Countryside Character Areas (CCAs)

Non-statutory sub-divisions of England, as defined under the Countryside Agency's Countryside Character Initiative. There are 159 Character Areas in England, each with a broadly cohesive countryside character and specific ecological and landscape issues.

Culvert

A covered channel or pipeline which is used to continue a watercourse or drainage path under an artificial obstruction.

Department for Environment, Food and Rural Affairs (Defra)

The department of central government responsible for flood management policy in England and the funding of environmental, agricultural and flood risk management programmes.

Damages

A measure in financial terms of the combined impact of fluvial flood variables such as probability, extent, depth, topography and mitigation.

Dendritic

A river system where the tributaries to the trunk river have tributaries of their own.

Digital Terrain Model (DTM)

A dataset representing the elevation of the terrain with buildings and vegetation removed, usually in the form of an electronic map. With airborne techniques automated filters have been developed which can detect buildings and remove them and fill the gap with data.

Driver

The force behind change or a key consideration.

Economic Indicators

The economics indicators for the Thames CFMP are the annual average damages and the number of properties at risk.

English Nature

English Nature is the statutory service responsible for looking after England's variety of wild plants and animals, its biodiversity and natural features. From the beginning of October 2006 English Nature, the environment activities of the Rural Development Service and the Countryside

Agency's Landscape, Access and Recreation division will be united in a single body called Natural England.

Environment Agency

Non-departmental public body responsible for the delivery of central government policy relating to the environment and flood risk management in England and Wales.

Environment Agency vision

The Environment Agency's 'vision' for the environment and a sustainable future is: "A healthy, rich and diverse environment in England and Wales, for present and future generations." To achieve the targets that will make the 'vision' a reality, the Environment Agency has identified nine key 'themes' or 'frameworks for change' through which it will work for a more sustainable future.

- A better quality of life: The Environment Agency will work with all sectors to enhance the quality of the environment and the services it provides.
- An enhanced environment for wildlife: The Environment Agency will ensure that its activities and those it authorises do not threaten key species and habitats.
- Cleaner air for everyone
- Improved and protected inland and coastal waters: The Environment Agency will work to clean up polluted waters and to reduce the risk of further pollution.
- Restored protected land with healthier soils
- A 'greener' business world
- Wiser sustainable use of natural resources
- Limiting and adapting to climate change
- Reducing flood risk: The Environment Agency will improve flood defences and information on flood risks.

Further information can be found at: <http://www.environment-agency.gov.uk/aboutus>

Environmental indicators

The environmental indicators for the Thames CFMP are the channel morphology and the potential for floodplain restoration.

Environmental stewardship scheme

A Defra, agri-environment scheme launched in March 2005, which provides funding to farmers and other land managers in England who deliver effective environmental management on their land. The primary objectives are to:

- Conserve wildlife (biodiversity)

- Maintain and enhance landscape quality and character
- Protect the historic environment and natural resources
- Promote public access and understanding of the countryside
- Natural resource protection

The secondary objectives are genetic conservation and flood management. Further information can be found at: www.defra.gov.uk/erdp/schemes/es

Enumeration District

Areas providing workloads and an organisational structure for the delivery, collection, and processing of the Census. From the 1961 to the 1991 Census, Enumeration Districts were the smallest area for which results were made available. They were superseded for 2001 Census output purposes by Output Areas. Further information can be found at: www.statistics.gov.uk

Ephemeral

Lasting a day or only a few days, short-lived, transitory e.g. an ephemeral watercourse

Flood Alleviation Scheme (FAS)

A scheme designed to reduce the risk of flooding at a specific location.

Flood Damages

Flood damages are worked out from the estimated flood depth and extent data obtained from hydraulic modelling. By combining the information on the type and value of properties shown to be within the modelled flood outline, it is possible to calculate the overall damage the flooding would cause. Flood damage figures can be given for a range of specified magnitudes of flood event, for example, the 1% annual probability flood event.

Flood defence

A structure (or system of structures) for the alleviation of flooding from rivers or the sea.

Flood Estimation Handbook (FEH)

The Flood Estimation Handbook provides the current methodologies for estimation of flood flows within the UK.

Flood Extent

The area that is flooded during a flood of a given probability. The 1% AEP flood extent is the area that is flooded during a flood with 1% probability of happening in any year.

Flood resilience & resistance

Measures that can be introduced into new and existing developments to reduce the consequences of flooding. They can be either permanent or temporary and measures include concrete flooring, raised electrical points, water resistant plastic finishes instead of wood, water resistant cement render for walls rather than plaster and one way valves to prevent backflow. In areas where there are large numbers of people at risk it is beneficial to develop emergency response plans, that consider warning, preparation and evacuation measures.

Flood risk

The level of flood risk is the product of the frequency or likelihood of flood events and their consequences (such as loss, damage, harm, distress and disruption).

Flood risk area

The Thames CFMP divides the Thames Region in to nine flood risk areas, with similar characteristics in terms of the level of flood risk, hydrology and mechanisms of flooding. This is the basic geographical unit that we have used for collecting and collating the information used to form policy. These areas and the supporting data are described in detail in Appendix D.

Flood Risk Management (FRM)

The activity of understanding the probability and consequences of flooding, and seeking to modify these factors to reduce flood risk to people, property and the environment. This should take account of other water level management and environmental requirements, and opportunities and constraints. It is not just the application of physical flood defence measures.

Flood risk management measures

Structural and non-structural interventions that modify flooding and flood risk either through changing the frequency of flooding, or by changing the extent and consequences of flooding, or by reducing the vulnerability of those exposed to flood risks. Measures, in isolation or in combinations of more than one measure, are the means by which a catchment policy is implemented.

Flood Risk Management Strategy

A long-term (usually 50 years or more) documented plan for river or coastal management, including all necessary work to meet defined flood and coastal defence objectives for the target area. A Strategy Plan is more detailed and usually covers a smaller area than a CFMP.

Flood warning lead time

The length of time in hours and minutes between a warning being received by someone at a flood-prone location, and the onset of flooding.

Flood warning system

The Environment Agency provides a flood warning service to alert the public to a flood risk, this service relies on the flood warning system. A flood warning system consists of detection, forecasting, warning and response.

Flood Zone (FZ)

The Thames CFMP focuses on the impact of fluvial flooding. This type of flooding occurs predominantly in the floodplain. The Environment Agency has developed flood risk maps which distinguish three flood zones, based on the occurrence of flooding:

- Floodzone 3 is the area that will flood during a fluvial flood event with an occurrence of 1% AEP (1:100 years return period).
- Floodzone 2 is the area that will flood during a fluvial flood event with an occurrence between 1% AEP and of 0.1% AEP (1:100 - 1:1000 years return period).
- Floodzone 1 is the area that will flood during a fluvial flood event with an occurrence smaller than 0.1% AEP (Return period > 1:1000 years).

Floodline Warnings Direct

We started issuing flood warnings in 1996 using our Automated Voice Messaging (AVM) system. In January 2006 we replaced the AVM system with Floodline Warnings Direct (FWD). It is the UK's first integrated multi-channel warning system, providing flood warnings and information to the public, professional partners and the media across England and Wales.

FWD is a free flood warning system which delivers advance warning of flooding to customers 24 hours a day by telephone, mobile, fax, email, SMS text or pager. Customers registered on FWD will be sent flood warnings for flooding from rivers or the sea.

Floodplain

Any area of land over which water flows or is stored during a flood event or would flow but for the presence of flood defences.

Fluvial

Related or connected to a watercourse (river or stream).

Fly-tipping

Illegal dumping of waste.

Geographical Information System (GIS)

A GIS is a computer-based system for capturing, storing, checking, integrating, manipulating, analysing and displaying data that are spatially referenced.

Geomorphology

Processes of erosion, deposition and sediment transport that influence the physical form of a river and its floodplain.

Gravity outfall

Discharge through a pipe or sluice with no pumping.

Green Grid

A functional network of green spaces linked by river corridors that can provide many benefits to local communities. These include spaces for recreation and relaxation, healthy exercise and well being; local food production; habitats for wildlife; outdoor education; air quality improvements and sustainable flood management

Groundwater

Water occurring below ground in natural formations (typically rocks, gravels and sands).

Habitats Directive

European Community Directive (92/43/EEC) on the Conservation of Natural Habitats and of Wild Flora and Fauna. Implemented in the UK through the Conservation (Natural Habitats, etc.) Regulations (1994) and known as the 'Habitats Directive'. It establishes a system of protection for certain fauna, flora and habitats deemed to be of European conservation importance. Further information can be found at: http://www.hmso.gov.uk/si/si1994/Uksi_19942716_en_1.htm

Hydraulic model

A computer model that simulates how water flows through a river channel and floodplain. The model can be used to determine peak water levels, peak flows, discharge volumes and flood event durations along a river system for a specific modelled event.

Hydrograph

A graph showing the water level (stage), discharge, or other property of the flows in a river, with respect to time.

Impact

The consequence or effect of an event. The Thames CFMP is concerned with the effect that flooding has on the economy, people and the environment and how we can reduce these effects

Infiltration

Process by which fluid enters into the pores of a solid.

Integrated urban drainage

Incorporates all parts of the urban drainage system. Looking all sources of flood risk in urban areas through an effective partnership between responsible bodies.

Land use

The designated activity for which land is used, for example residential, agriculture, forestry. The term Land Use is used in many contexts and is controlled by the town and country planning system

Land management

A scheme, plan or other project that uses particular practices to affect the character, quality or value of an area, for example different farming techniques. Land Management is subject to UK legislation and may require authorisation from a competent authority (e.g. English Nature) or, where it results in a change in Land Use, may require planning permission.

LiDAR

Light Detection and Ranging (LiDAR) is an airborne topographical mapping technique that uses a laser to measure the distance between the aircraft and the ground.

Likelihood

A general concept relating to the chance of an event occurring. Likelihood is generally expressed as a probability or a frequency.

Local Biodiversity Action Plan (LBAP)

A local agenda (produced by the local authority) with plans and targets to protect and enhance biodiversity and achieve sustainable development. The Agency is committed to Biodiversity

Action Plans and works with central government (Rio Earth Summit, 1992) to realise LBAP objectives. Further information can be found at:

<http://www.ukbap.org.uk/GenPageText.aspx?id=57>

Local Development Framework (LDF)

Local Development Frameworks were prepared by each local planning authority (district council and unitary authority) following the Planning and Compulsory Purchase Act 2004. They include development plan documents, comprising the spatial planning strategy for a local authority area, and supplementary planning documents which expand policies set out in a development plan document. The LDF guides and informs day to day decisions as to whether or not planning permission should be granted (the development control process). To make sure that those decisions are sound and consistent, they must be made in accordance with the adopted Development Plan. They generally cover a 10-year period and are currently reviewed on a 5-year basis. A regional land use strategy will guide the local development framework of several district councils or unitary authorities. Further information can be found at:

<http://www.planningportal.gov.uk/uploads/ldf/ldfguide.html>

Local Nature Reserve (LNR)

Local Nature Reserves are designated under the National Parks and Access to the Countryside Act 1949 by Local Authorities (which must have some legal control over the site) in consultation with English Nature for their locally important wildlife or geological features. They are generally intended for education and amenity in addition to conservation.

Local plan

A statutory plan produced by District Councils (including city or borough councils) but not by Unitary Authorities. It is a detailed written statement describing and illustrating development proposals at a local level. It may include planning policies and development proposals for specific sites. Will be superseded by the proposed Local Development Framework.

London Plan

The London Plan is the Mayor's spatial development strategy for London. This replaces the previous strategic planning guidance for London (known as RPG3), issued by the Secretary of State. The final London Plan was published on 10 February 2004 and is produced by the GLA and covers the 32 London boroughs. Further information can be found at:

<http://www.london.gov.uk/mayor/planning/strategy.jsp>

Main River

Watercourses defined on a 'Main River Map' designated by Defra. We (The Environment Agency) have permissive powers to carry out flood defence works, maintenance and operational activities for Main Rivers only. Responsibility for maintenance however rests with the riparian owner (the land owner).

'Maintained' channel

A classification in the NFCDD database. Applies to areas where the river channel has been modified for flood risk management purposes. These modifications include; artificial lining of the channel, engineering of the channel and bank protection measures. The 'Maintained' channel classification does not include raised banks or structures such as bridges, weirs and trash screens.

Making space for water

A strategy produced by DEFRA, for sustainable flood and coastal erosion risk management. The aim of the strategy is:

To manage the risks from flooding and coastal erosion by employing an integrated portfolio of approaches which reflect both national and local priorities, so as:

- to reduce the threat to people and their property; and
- to deliver the greatest environmental, social and economic benefit, consistent with the Government's sustainable development principles.

Further information can be found at:

<http://www.defra.gov.uk/enviro/fcd/policy/strategy.htm>

Mitigation

The moderation/reduction of flood risk.

Modelling and Decision Support Framework (MDSF)

MDSF is a GIS-based decision support tool developed by Defra and the Environment Agency to assist the CFMP process through automation of parts of the analysis. It works with flood data (either real or derived from hydraulic model results) and enables a rapid and repeatable analysis of a range of future scenarios against a range of possible measures. Further information can be found at: <http://www.mdsf.co.uk>

National Flood and Coastal Defence Database

Defra High Level Target 4A required the Environment Agency, in partnership with the other operating authorities (local authorities and internal drainage boards), to develop a National Flood

and Coastal Defence Database (NFCDD) and maintain it thereafter. The aim of the NFCDD project was to provide a single easily accessible and definitive store for all data on flood and coastal defences in order to make better-informed decisions on defence needs and measures. This will result in improved investment decisions by operating authorities. The principal benefit of this is a reduction in flood and coastal erosion damages.

National Nature Reserve (NNR)

National Nature Reserves have been established to protect the most important areas of wildlife habitat and geological formations in Britain, and as places for scientific research. All NNRs are “nationally important” and are best examples of a particular habitat. NNRs are designated, and receive SSSI designation, under the National Parks and Access to the Countryside Act 1949 or the Wildlife and Countryside Act 1981 (as amended). They are either controlled by English Nature or managed by approved bodies such as Wildlife Trusts and have Reserve Management Plans that are updated every 5 years. At the end of March 2004 there were 215 NNRs in England covering over 87,900 hectares. Further information can be found at:

http://www.englishnature.org.uk/special/nnr/nnr_search.asp.

National Rivers Authority (NRA)

The National Rivers Authority was one of three predecessor bodies to the Environment Agency.

Optimum

The most favourable outcome taking into account the losses and gains.

Ordinary watercourse

Any watercourses not designated as Main River, Critical Ordinary Watercourses or Internal Drainage Board watercourses. Operating authorities have permissive powers and duties to maintain ordinary watercourses within their boundaries. The Environment Agency has supervisory duties with respect to ordinary watercourses but overall responsibility for maintenance rests with the riparian (land) owner.

Planning Policy Statement 25 (PPS25): Development and flood risk

Provides guidance to planning authorities, to give greater consideration to flood risk issues. Will replace Planning Policy Guidance PPG25 to provide a more strategic approach with greater emphasis on flood risk assessments. The consultation draft of PPS25 will emphasise the need to consider flood risk as early as possible in the planning process and will aim to clarify the sequential test, which allocates development to areas of least flood risk first. It also matches the

nature of the development to the level of flood risk. In addition, ODPM will consult on strengthening the role of the Environment Agency, making it a statutory consultee. Further information can be found at: <http://www.communities.gov.uk/index.asp?id=1143803>

Policy Units

Policy Units are determined through analysis of the catchment vision, flood risk assessments and issues, such that the six generic flood risk management policies applied based on the policy appraisal.

Probability

A measure of the chance that an event will occur. The probability of an event is typically defined as the relative frequency of occurrence of that event, out of all possible events. Probability can be expressed as a fraction, % or a decimal. Probability is often expressed with reference to a time period, for example, annual exceedence probability.

Properties affected (by flooding)

Properties that are located within our 1% AEP and 0.1% AEP floodplain extents.

Properties flooded

Properties that have been inundated by flood water in the past

Qualitative

Concerned with or depending on quality – descriptive

Quantitative

Measured or measurable by, concerned with quantity – numerical e.g. monetary value

Ramsar site

The “Ramsar Convention on Wetlands of International Importance, Especially as Waterfowl Habitat (1971)” imposes a requirement on the UK Government to promote the wise use of wetlands and to protect wetlands of international importance. This includes the designation of certain areas as Ramsar Sites, where their importance for nature conservation (especially with respect to waterfowl) and environmental sustainability meet certain criteria. Ramsar Sites receive SSSI designation under the Countryside and Rights of Way (CRoW) Act (2000) and the Wildlife and Countryside Act (1981) (as amended). Further information can be found at: <http://www.ramsar.org>

Receptor

Asset, people or environmental, cultural or landscape resource that is at risk of flooding. For example, in the event of heavy rainfall (*the source*) floodwater may propagate across the flood plain (*the pathway*) and inundate housing (*the receptor*) that may suffer material damage (*the harm or consequence*).

Regional Planning Guidance (RPG)

Planning guidance issued for a region of the UK by the relevant Regional Government Office. RPG sets out a range of public policies to manage the future distribution of activities in the region. RPGs are to be replaced by Regional Spatial Strategies.

Regional Spatial Strategies (RSS)

A statutory planning document developed by the Regional Assembly. It provides spatial planning guidance for sustainable development. The replacement for Regional Planning Guidance.

Reservoir

An artificial lake where water is collected and stored in quantity.

Residual life

The remaining life expectancy. The amount of time left before we will need to replace the asset or use an alternative approach.

Riparian

Land or habitat connected with, or immediately adjacent to, the banks of a river or stream.

Risk

Risk is a combination of the chance of a particular event, with the impact that the event would cause if it occurred. Risk therefore has two components – the chance (or *probability*) of an event occurring and the impact (or *consequence*) associated with that event. The consequence of an event may be either desirable or undesirable. Generally, however, the flood and coastal defence community is concerned with protecting society and hence a *risk* is typically concerned with the likelihood of an undesirable consequence and our ability to manage or prevent it.

Risk assessment

The process of identifying hazards and consequences, estimating the magnitude and probability of consequences and assessing the significance of the risk(s).

River corridor

The continuous area of river, river banks and immediately adjacent land alongside a river and its tributaries.

Scenario

A possible future situation, which can influence either catchment flood processes or flood responses. Scenarios will usually comprise combinations of the following: urban development (both in the catchment and river corridor); change in land use and land management practice (including future environmental designations); or climate change.

Section 105

The section of the Water Resources Act under which Floodplain Mapping is carried out. Level A was the initial Section 105 modelling, whilst level B modelling has been undertaken to look at key areas in more detail. Further information can be found at:

http://www.hms.gov.uk/acts/acts1991/Ukpga_19910057_en_12.htm

Shoreline Management Plan (SMP)

Non-statutory plans to provide sustainable coastal defence policies (to prevent erosion by the sea and flooding of low lying coastal land), and to set objectives for the future management of the shoreline. They are prepared by the Environment Agency or maritime local authorities, acting individually or as part of coastal defence groups.

Site of Special Scientific Interest (SSSI)

SSSIs are the finest sites for wildlife and natural features in England identified by English Nature. Sites notified under the Wildlife and Countryside Act 1981 (as amended) and the Countryside and Rights of Way (CRoW) Act 2000 for their flora, fauna, geological or physical features. Notification of a SSSI includes a list of operations that may be harmful to the special interest of the site. The Wildlife and Countryside Act 1981 (as amended) provides significantly enhanced protection for SSSIs. All SACs, SPAs and Ramsar sites are designated as SSSIs. Further information can be found at: <http://www.english-nature.org.uk/special/sssi>

Social indicators

The social indicators for the Thames CFMP are the number of people at risk and the social vulnerability.

