Catchment Flood Management Plans

Volume I – Policy Guidance
July 2004

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Department for Environment Food and Rural Affairs

Llywodraeth Cynulliad Cymru
Welsh Assembly Government

Environment Agency

The Environment Agency is the leading public body protecting and improving the environment in England and Wales.

It's our job to make sure that air, land and water are looked after by everyone in today's society, so that tomorrow's generations inherit a cleaner, healthier world.

Our work includes tackling flooding and pollution incidents, reducing industry's impacts on the environment, cleaning up rivers, coastal waters and contaminated land, and improving wildlife habitats.

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Preface

One of the Environment Agency's main goals is to reduce flood risk from rivers and the sea to people, property and the natural environment by supporting and implementing government policies.

Flooding is a natural process – we can never stop it happening altogether. So tackling flooding is more than just defending against floods. It means understanding the complex causes of flooding and taking co-ordinated action on every front in partnership with others to reduce flood risk by:

- Understanding current and future flood risk
- Planning for the likely impacts of climate change
- Preventing inappropriate development in flood risk areas
- Delivering more sustainable measures to reduce flood risk
- Exploring the wider opportunities to reduce the sources of flood risk, including changes in land use and land management practices and the use of sustainable drainage systems.

Catchment Flood Management Plans (CFMPs) are a planning tool through which the Agency aims to work in partnership with other key decision-makers within a river catchment to explore and define long term sustainable policies for flood risk management. CFMPs are a learning process to support an integrated approach to land use planning and management, and also River Basin Management Plans under the Water Framework Directive.

Contents

1 Introduction

1.1 Background

These Guidelines have been produced by the Environment Agency in collaboration with the Department for Environment, Food and Rural Affairs (Defra) and the Welsh Assembly to inform practitioners of the concept and scope of Catchment Flood Management Plans (CFMPs) and to provide guidance on their production and development.

The Guidelines are published in two volumes:

- **Volume I** provides policy guidance on the vision, purpose and stages of producing a CFMP
- **Volume II** sets out procedures for each step of the process and contains practical guidance on appropriate methodologies for the various aspects of CFMP development.

The Environment Agency, in partnership with Defra and the Welsh Assembly, aims to reduce flood risk from rivers (and sewers, groundwater and the sea) to people, property and the natural and built environment by supporting and implementing government policies. The guidelines support the Environment Agency's Strategy for Flood Risk Management[1] and work towards delivering the Government's new strategy for flood and coastal erosion risk management[2]. The integrated treatment of environmental, social and economic issues is a key principle of the Government's Sustainable Development Strategy[3].

Flooding is a natural process. We can never stop it happening altogether, so tackling flooding is more than just defending against floods. It means understanding the complex causes of flooding and taking co-ordinated action in partnership with others to reduce both the probability and impact of floods. We also need to recognise that flooding may need to increase in some areas in order to reduce it in other, more sensitive locations.

Key terminology introduced and used within this Policy Guidance is explained at the end of this document.

1.2 What are CFMPs?

A Catchment Flood Management Plan (CFMP) is a high-level strategic planning tool through which the Environment Agency will seek to work with other key decision-makers within a river catchment to identify and agree policies for sustainable flood risk management.

CFMPs will improve our understanding of what factors influence floods and flood risks at the catchment scale. CFMP's will provide a similar level of strategic guidance as Shoreline Management Plans (SMPs)[4] are already doing for managing the risks related to coastal flooding and erosion.

CFMPs will involve a process of flood risk assessment to identify the size and location of various influences that can make a difference to the probability and consequences of flooding in the catchment. In gaining this understanding we will be able to determine the effect of potential changes in the catchment on flood risk, be they local or widespread. Potential changes may, for example, include:

- Land use, such as new development or significant changes in the developed environment

[1] *Strategy For Flood Risk Management (2003/4 - 2007/8),* Version 1.2, Environment Agency, 2003

[2] *Making Space for Water* (Defra, draft January 2004).

[3] DETR *1999: A Better Quality of Life: A strategy for sustainable development for the UK)*

[4] Further details available from http://www.defra.gov.uk/environ/fcd/policy/smp.htm

- Changes in the rural landscape, including large scale changes in land management
- Loss of, or potential threat to, wildlife habitats or biodiversity
- Measures to reduce the effect of floods on communities
- Climate change.

With a full understanding of the flood risks, both now and in the future, our resources can then be targeted at those areas of greatest need. Further investigation of the flood risk issues (e.g. through Strategy Plans or Projects) will facilitate delivery of flood risk reduction measures that maximise return on investment.

CFMPs will identify broad policies for sustainable flood risk management that make sense in the context of the whole catchment and for the long term (50 to 100 years). They will not determine specific flood risk reduction measures or management approach for flooding issues in a catchment. Whilst it is not possible to understand in detail what will occur in 50 to 100 years time, general trends can be projected to test the sustainability of plans. CFMPs will be reviewed as appropriate to reflect changes in the catchment, although this is unlikely to be within 5 years of the CFMP being produced.

2 The Aims and Objectives of CFMPs

2.1 Aims of Catchment Flood Management Planning

The aims of Catchment Flood Management Planning can be defined as:

- To reduce the risk of flooding and harm to people, the natural, historic and built environment caused by floods
- To maximise opportunities to work with natural processes and to deliver multiple benefits from flood risk management, and make an effective contribution to sustainable development
- To support the implementation of EU directives, the delivery of Government and other stakeholder policies and targets, and the Agency's Environmental Vision[5]
- To promote sustainable flood risk management; and
- To inform and support planning policies, statutory land use plans and implementation of the Water Framework Directive.

The **aims** set the overall direction of flood risk management at the catchment scale. They represent long term aspirational targets that are not necessarily deliverable within the life of a single CFMP.

2.2 Objectives

The **objectives** define the goals: clear targets of delivery for the CFMP. The following objectives, in conjunction with the *aims* identified above, are common to all CFMPs and provide the necessary framework for development and appraisal of sustainable policies.

> The key objective of a CFMP is to develop complementary policies for long-term management of flood risk within the catchment that take into account the likely impacts of changes in climate, the effects of land use and land management, deliver multiple benefits and contribute towards sustainable development.

In addition to the key objective are the following overarching objectives:

- To undertake a high-level strategic assessment of current and future flood risk from all sources (i.e. rivers, sewers, groundwater etc) within the catchment, by understanding the components that constitute the risk (i.e. both probability and impact) and the effect of current risk reduction measures. The scale of risk should be broadly quantified in economic, social and environmental terms;
- To identify opportunities and constraints within the catchment for reducing flood risk through strategic changes or responses, such as changes in land use, land management practices and/or the flood defence infrastructure;
- To identify opportunities during flood risk management to maintain, restore or enhance the total stock of natural and historic assets (including biodiversity);
- To identify the relative priorities for strategic studies, actions or projects to be undertaken to manage flood risk within the catchment, and assign responsibility to the Agency, other operating authorities, local authorities, water companies or other key stakeholders.

[5] Details of the Environment Agency Vision, based around 9 targets for change, can be found at www.environment-agency.gov.uk/aboutus/286233/106775/106809/

2.3 CFMP Outputs

The outputs from a CFMP are presented in Box 1.

CFMP policies will be driven by the extent, nature and scale of current and future flood risk across the whole catchment, with an overarching aim to reduce flood risk within the catchment by delivering the specific CFMP objectives (see section 5.3.6). The policies are concerned with setting the right strategic approach to managing the overall flood risks within the catchment. It is not realistic (in social, economic and environmental terms) within many catchments to be able to reduce flood risk everywhere, so it must be understood where the greatest flood risks are and why before selecting policies. Hard decisions must be made during policy selection to decide where further action should be taken to reduce or sustain flood risk, where current management activities need to be changed or reduced, or where little or no action should be taken.

The CFMP policies will feed directly into the development of Strategy Plans (where required) and subsequent projects to implement flood risk management measures.

Examples of catchment policies, opportunities and constraints are given towards the back of these guidelines.

Box 1 CFMP Outputs

The key outputs from the CFMP are:

- A broad understanding of the size, nature and distribution of current flood risk and scenarios for future flood risk in the catchment
- A complementary set of justifiable, long-term flood risk management policies that satisfy the catchment objectives
- A prioritised set of further studies/actions for the catchment.

In addition the final approved CFMP should comprise:

- An enhanced understanding of the catchment's existing and future flood processes, including responses to extreme events and sensitivity to change
- A broad appreciation of the current and future flooding within the catchment, including the location of flood risk areas
- An assessment of flood risk across the whole catchment that considers the potential impacts of changes in climate, land use and land management on flood risk
- A relevant assessment of the risks and uncertainties associated with the preferred long-term policies for flood risk management within the catchment and determination of the residual risks
- A high level Action and Monitoring Plan including identification of studies that might be needed to address uncertainties associated with the preferred policies
- Information to support the planning system and guide decisions on the location of future development in the forward development planning process
- Information as required by the SEA regulations for environmental reports, including information on the range of habitats and species in the catchment and sensitivity to current and future flood regimes.

These additional outputs should be supported by technical documentation including:

- An Inception Report, a Scoping Report and a Draft CFMP
- Maps and spatial data to illustrate the areas over which policies apply, areas sensitive to change in flood risk (in relation to current published flood outlines rather than producing new mapped outlines) and conservation resources
- A list of policies considered but rejected, together with the reasons
- An up-to-date list of catchment datasets/information collected and utilised during the CFMP process - which will form a useful starting point for future review of the CFMP
- An up-to-date list of key references, data sources and catchment stakeholders
- A record of the consultation responses received during the CFMP process
- A broad programme for monitoring the performance of CFMP policies and periodic review of the Plan
- A broad-scale model of at least part of the river catchment which can be archived for wider potential use
- As necessary, a separate broad-scale modelling report.

All outputs should take account of the reliability and adequacy of the existing information and the level of confidence that should be placed in the CFMP policies. The consequences of not being able to deliver the preferred policy should be identified.

3 CFMPs and the Wider Planning Framework

3.1 Who is involved?

The Environment Agency is promoting CFMPs with support from Defra and the Welsh Assembly, whose policies encourage a holistic and sustainable approach to flood risk management.

Reducing flood risk calls for collaboration with local planning authorities, landowners, local communities and other interested groups. Hence, the Environment Agency will seek to develop CFMPs in partnership with other flood defence/land drainage operating authorities, English Nature and Regional Planning Boards, the Welsh Assembly, and in consultation with key stakeholders and the general public.

Many different organisations and riparian owners have rights and responsibilities relating to the use of land and the flow of water and its control. Based on these guidelines, the CFMPs are intended to guide future decision makers in the main issues relating to flood risk management, rather than impart additional legal or financial powers or responsibilities to landowners, occupiers, central, regional or local government or others. It is anticipated that the CFMPs will be used by:

- The Environment Agency, who will use them to guide investment in flood risk management activities (e.g. strategic planning, asset management and flood event management) and support other activities within the catchment (e.g. River Basin management planning under the Water Framework Directive).
- Regional Assemblies, the Welsh Assembly and local authorities who will use them to inform spatial planning activities, sustainability appraisal/strategic environmental appraisal and emergency planning. CFMPs are a crucial element in applying the 'sequential approach' required by PPG25/TAN15 and their use will enhance the 'soundness' of spatial planning documents.
- Internal drainage boards and water companies to inform the planning of their activities in the wider context of the catchment.
- Defra and the Welsh Assembly for planning future funding and policy development across all functions.
- The public to enhance understanding of flood risk and the planning approach seeks to manage it in an integrated way.

3.2 Where do CFMPs fit into the wider planning framework?

CFMPs sit within the wide social-economic and natural environmental planning framework in England and Wales as illustrated in figure 1 overleaf.

CFMPs will be one of several statutory/non-statutory plans supporting the River Basin Management Plans (RBMPs), required under the EU Water Framework Directive. In particular, the CFMP will be necessary to determine appropriate actions that contribute to the Programme of Measures within RBMPs, and support Regional Planning Boards in their decision making on land use planning.

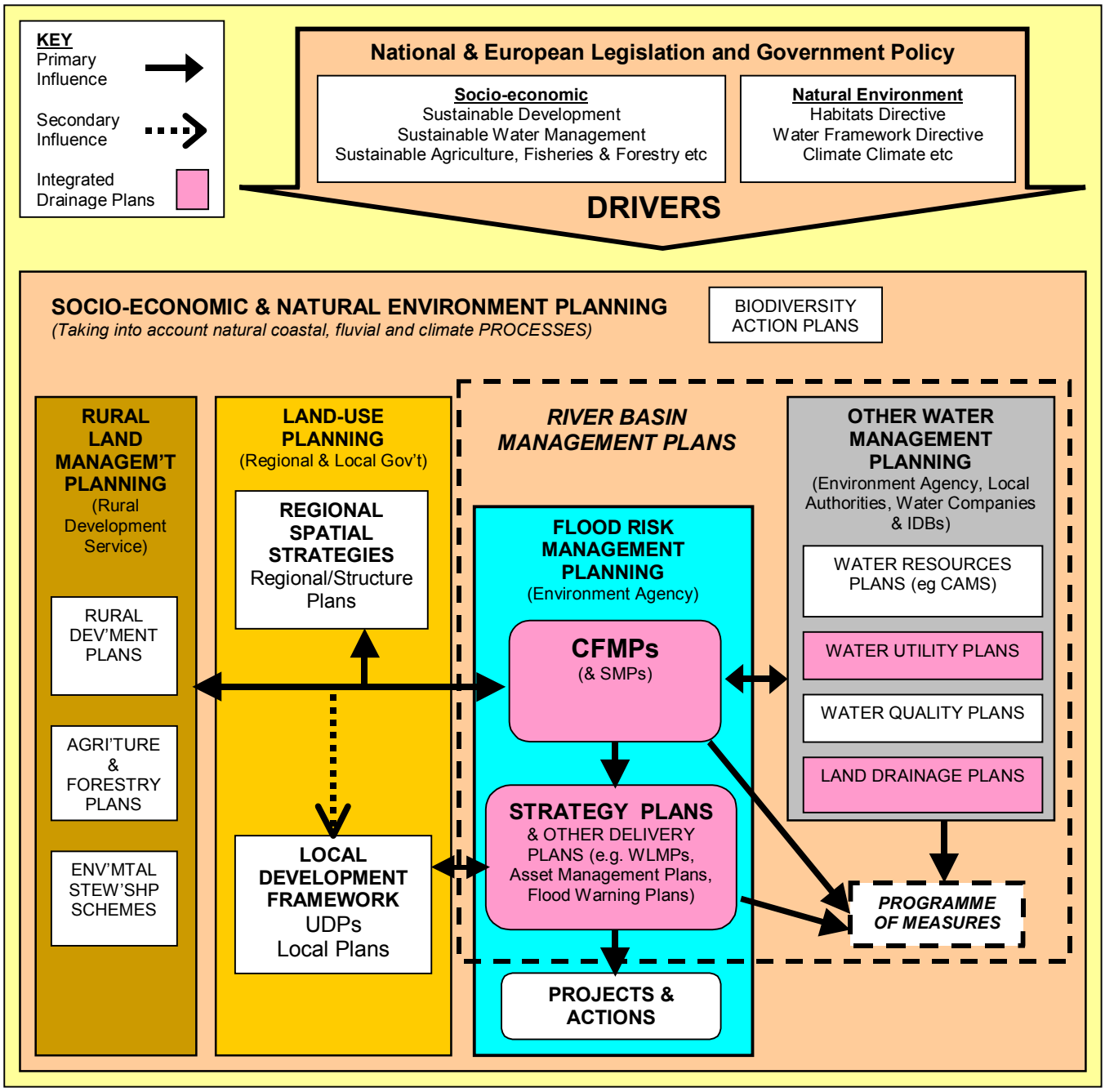
Those responsible for other plans will need to be informed of CFMPs and be appropriately involved in their development. Box 2 expands upon the relationship with flood risk management strategy plans and projects.

The Government and Welsh Assembly Government place much emphasis on the need for early support of Regional Spatial Strategies, Local Development Frameworks and Local Development Plans (in Wales). This means that CFMPs should be used at an early stage to inform the

formulation of policy options, including allocation of land for development. Similarly, CFMPs should be used in sustainability appraisal and strategic environmental assessment to test and enhance the robustness of proposed Spatial Strategies, Frameworks and Plans. The new breed of spatial plans can include policies concerning land use without being directly related to the granting of planning permission. Spatial planning documents should therefore include aspects of CFMPs that may affect land use (e.g. areas at high risk of flooding, where additional flood storage or flooding is necessary, or where changes in land management are proposed).

The Government's Foresight Project on Flood and Coastal Defence has produced a long-term vision for the future of flood and coastal defence in the UK over the period 2030 to 2100 that can inform future policy. CFMPs will consider the outputs from the Foresight project when assessing the scenarios for future flood risk in England and Wales. Further guidance is provided in Volume 2 – Procedural Guidance.

Figure 1: Links between Flood Risk Management Plans and the wider planning framework



Box 2 Flood Risk Management Planning Framework

There are three stages in delivering effective fluvial flood risk management. These are described below. Each stage requires an understanding of the flood risk processes at work, environmental considerations, planning issues and current and future land uses, etc. but at a level of detail appropriate to the stage.

	CFMP	Strategy Plan	Projects
Overall Objective	Development of a high level plan identifying policies for the sustainable management of flood risk throughout the catchment	To prepare a strategy plan (or other delivery plan), where required, identifying preferred management measures to deliver CFMP policies for specific areas within the catchment	To deliver the preferred flood risk management measures for a specific location within the catchment
Scope	An understanding of catchment processes and a broad-brush assessment of current and future flood risks and environmental constraints and objectives.	More detailed understanding of flood processes, appraisal of alternative management measures and selection of preferences	Appraisal of specific measures, and the selection, design and implementation of the preferred approach.
Output	A complementary set of flood risk management policies and an action plan for flood risk management activities	Preferred combination of flood risk management measures (e.g. type and location of measures)	Implemented projects e.g. improvement in flood warning service, enhanced maintenance regime, improvement to flood defence asset infrastructure, new flood defences etc.
Outcome	Improved long term management of flood risk in the catchment. Flood risk management policies will be integrated, sustainable and appropriate in the context of the whole catchment.	Improved long term management of flood risk based on measures that will provide the optimum approach to flood risk management for an area, appropriate in the context of the whole catchment, and the CFMP policies.	Reduced flood risk to people and assets (natural and man-made) within the influence of the project in a manner that is sustainable and appropriate in the context of the whole catchment.

Notes: **CFMPs** are intended to provide full geographic coverage of England and Wales, through approximately 80 plans.
Strategy Plans will only be required for specific locations identified in CFMPs
Projects will be required to implement specific flood risk management measures
Sustainable indicates that social, economic and environment issues have been taken into account and balanced to optimise the benefits to them in the long term

4 CFMP Preparation

An outline of what steps are required to produce a CFMP is shown as a flowchart in Figure 2 (at the end of this section). The timescales allocated to the phases shown in the flowchart are purely indicative and should be adjusted according to the nature, size and complexity of issues relevant to the individual catchment.

4.1 Overview of the Activities required by a CFMP

The activities required to develop a CFMP include the development of a clear strategic vision for flood risk management in the catchment (in partnership with key stakeholders), and:

To investigate and understand at a catchment scale:

- the physical characteristics of the catchment and how the drainage/river systems work in a range of normal and flood flows (hydrology, hydraulics, geomorphology, hydrogeology etc)
- existing land use and land management practices
- the location, condition and standard of existing flood defence systems (asset infrastructure)
- what flood risk management practices are currently undertaken within the catchment, and why
- the existing flood risks – where are they, their scale, why do they occur, what causes the risk (e.g. high frequency low impact or low frequency but high impact)
- the social, economic and environmental issues associated with flooding in the catchment
- the range of habitats and species in the catchment and sensitivity to current and future flood regimes
- the views of stakeholders via consultation.

To analyse and determine:

- scenarios for how the catchment may change over the long term (50-100 –years) through land use, development and land management practices, and what quantum of change is required to affect flood risk in the catchment
- the potential impact of climate change on flood risk in the catchment
- where the flood risk is particularly high at present, or will be at some point in the future, and where the greatest flood risks are and why
- the opportunities and constraints within the catchment for strategic responses and to secure wider multiple benefits from flood risk management practices
- what flood risk management policies should be pursued, and where to promote sustainable development, to bring about an overall reduction in flood risk within the catchment
- where there may be benefits in allowing flooding to increase
- where effort should be concentrated over the life of the CFMP, on flood risk management within the catchment
- where account needs to be taken of policy decisions in adjacent CFMPs and SMPs.

4.2 Delivering a CFMP

An essential element of developing a CFMP is a Steering Group comprising of key Environment Agency staff such as the Area Flood Defence Manager, and representatives from Defra/Welsh Assembly and key external stakeholders, such as Regional Planning Boards, English Nature/Countryside Council for Wales, Internal Drainage Boards. Other stakeholders such as Water Companies, the RSPB, National Farmers Union, British Waterways and Country Landowners Association will need to be involved as appropriate.

4.3 Reporting

There are four distinct reports required during the development of a CFMP:

4.3.1 Inception Report

This is a summary of readily available catchment data and issues with relevance to flood risk management. It will be compiled based on inputs from the Steering Group and key knowledge holders. Its purpose is to provide a catchment overview, to facilitate the discovery of further relevant data, and to ensure that relevant issues in the catchment have been identified.

In addition to the above, this report will set out the work required to produce the Scoping Report.

Whilst this report will be circulated to key stakeholders for comment, this exercise does not constitute formal consultation.

4.3.2 Scoping Report

The purpose of the Scoping Report is to:

- present the catchment understanding derived following feedback on the Inception Report
- present the results of a full understanding of the natural and physical processes, and assessment of current flood risk, within the catchment
- set out the specific draft catchment objectives and possible future scenarios
- present the scope of work and programme for the development of the draft CFMP
- facilitate active participation in the development of the CFMP.

Consultees should be asked to constructively examine the issues raised in the Scoping Report and highlight any significant flood risk management issues that may have been overlooked. In particular, consultees should be asked to identify any major opportunities or constraints that need to be taken into account in the subsequent analysis and appraisal of policies for flood risk management. Further guidance on which consultees should be involved at this stage is given in Volume 2 – Procedural Guidance.

4.3.3 Draft CFMP

The purpose of the Draft CFMP is to present information and enable consultation on the preferred flood risk management policies within the catchment. It will include a draft Action and Monitoring Plan. Further guidance on the content of the Draft CFMP and which consultees should be involved at this stage is given in Volume 2 – Procedural Guidance.

4.3.4 Final CFMP

Following consultation on the Draft CFMP, all feedback must be reviewed, and the Draft CFMP and Action and Monitoring Plan updated. The final CFMP must then be disseminated to stakeholders in accordance with the Consultation Plan.

4.4 Strategic Environmental Assessment

The Strategic Environmental Assessment (SEA) Directive (2001/42/EC) will be implemented into UK legislation in July 2004. The application of the SEA Regulations to the CFMP process will be included as good practice. The Draft CFMP will contain the Environmental Report described in the SEA Regulations.

The objective of the SEA Directive is to provide high level protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development. To this end, an environmental assessment must be carried out of certain plans and programmes which are likely to have a significant effect on the environment. Human health, population, and water are aspects that SEA suggests should be considered as environmental effects. Hence the risk assessment to people and property and understanding of flooding processes that will be

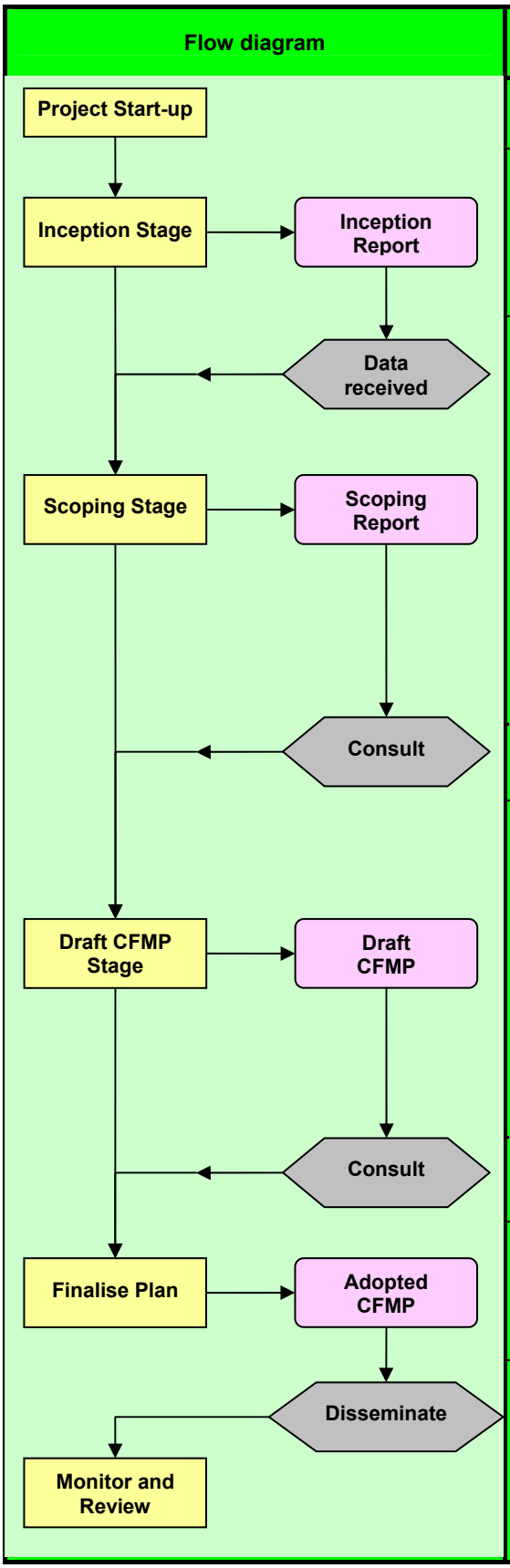
analysed and documented in the CFMP will also form an integral part of the strategic environmental assessment.

The SEA Directive promotes an objectives-led approach and includes requirements for baseline environmental data gathering, identification of environmental opportunities and constraints, environmental appraisal of alternatives and consultation with environmental bodies and the public. To be effective, SEA must be fully integrated into the plan-making process, starting as soon as a new or revised plan is first considered, and inputting at each stage where decisions are taken. Detailed records of assessments, consultations and decisions form part of the environmental assessment. The SEA requirements have shaped the stages and activities in developing a CFMP as set-out by these Guidelines. Compliance with the SEA regulations will be achieved by following the further guidance given in Volume 2 – Procedural Guidance.

4.5 Modelling and Decision Support Framework

A flood Modelling and Decision Support Framework (MDSF) has been developed, which will be used to support the production of all CFMPs. The MDSF is a software tool based on Geographical Information System (GIS) technology that assists the analyses of data at the various stages of production of a CFMP. The use of MDSF in CFMPs is summarised in Volume 2. The MDSF does not include models - it takes in modelling results for analysis and presentation.

Figure 2 Outline Approach for Catchment Flood Management Planning



Stage and Activities	Indicative timescale
1. Project Start-up	½ month
2. Inception Stage (a) Establish CFMP Steering Group (b) Initial data collection (c) Initial understanding of catchment issues (d) Produce Communications Plan (e) Produce Inception Report	1½ months
3. Scoping Stage (a) Review existing policies, plans, etc. (b) Collate additional data (c) Understanding of current flood risks and their management • Catchment processes • History of flooding • Assessment of current flood risks • Existing flood risk management activities • Flood risk management issues (d) Scope possible future scenarios (e) Identify draft objectives for the catchment, including opportunities and constraints (f) Produce Scoping Report (g) Issue Scoping Report for consultation	4 months
Consultation	3 months
4. Draft CFMP Stage (a) Review consultation responses (b) Finalise future scenarios (c) Assessment of future flood risk under scenarios (d) Develop opportunities and constraints (e) Identify policy options and policy units (f) Appraise policies (g) Select preferred policy (h) Develop Monitoring and Action Plan (i) Produce Draft CFMP (j) Issue Draft CFMP for consultation	4 months
Consultation	3 months
5. Finalise Plan (a) Review consultation responses (b) Produce the final CFMP	2 months
Monitor and Review	

5 Stages of CFMP development

5.1 Stage 1 - Project Start-up

Project Start-up will include the following tasks:

5.1.1 Definition of the CFMP boundary

The proposed CFMP boundaries are illustrated in appendix A. CFMP boundaries will fall wholly within river basin management districts under the WFD where possible. Small catchments with similar characteristics may be grouped together.

CFMPs will cover the whole of England and Wales extending to the coast, although only fluvial and tidal flood risks will be considered. Coastal flood risks will be considered by Shoreline Management Plans (SMPs). There should be no gaps between CFMPs and SMPs.

For each CFMP a large detailed map should be produced illustrating key data necessary to gain a good catchment overview for reference in project meetings.

5.1.2 Establish the Project Board and Project Team

The CFMPs will be developed locally by a project within a framework established by a national programme. The governance for each CFMP project must be established in accordance with Environment Agency financial procedures (see Volume 2 – Procedural Guidance).

A Project Board is required to oversee the project resources and programme for the production of the CFMP.

A Project Team will ensure delivery of the CFMP in accordance with this national Policy Guidance. The team will generally consist of Agency staff and a consultant to support with technical aspects of the CFMP. It is important that the project team ensures wider engagement across the Agency functions.

5.2 Stage 2 - Inception

This stage will:

5.2.1 Establish the CFMP Steering Group

The remit of the Steering Group is to ensure engagement from key external stakeholders, to provide technical guidance on wider issues, and to agree the outputs from the project. The Steering Group will include key Environment Agency staff and other stakeholders (see Volume 2 for guidance and a generic list to draw from). The Steering Group may also undertake the role of the Project Board.

The Steering Group will confirm their terms of reference and composition (draft terms of reference will be provided in Volume 2). This will imply a commitment to the programme and resource requirements.

5.2.2 Initial data collection

Data collection and review at this stage will be limited to that which is readily available from Steering Group members and identified key knowledge holders, and will focus on known flood risk issues.

The Steering Group will guide the identification of other stakeholders and knowledge holders, and identify sources, nature and value of available data.

5.2.3 Initial understanding of catchment issues

From available data, an initial understanding of catchment issues will be developed, and additional data requirements identified. This initial understanding will enable the work required to produce the Scoping Report to be planned. The work required producing the full CFMP would not be planned at this early stage.

The Steering Group (i.e. in partnership with key stakeholders) should develop a clear strategic vision for flood risk management in the catchment to steer the development of the CFMP.

5.2.4 Produce Communications Plan

The Communication Plan will identify internal (Environment Agency) and external consultees, what needs to be communicated, when and how, throughout the development of the CFMP. A generic template for the Communications Plan is provided in Volume 2 – Procedural Guidance.

5.2.5 Produce the Inception Report

The information gathered during this stage will be presented in an Inception Report.

Once agreed by the Steering Group, the Inception Report will be issued in accordance with the Communications Plan. The purpose of the Inception Report is to inform stakeholders of the CFMP production programme, and to seek confirmation and feedback on initial catchment overview, catchment issues and data availability. This is not a formal consultation exercise.

5.3 Stage 3 - Scoping

At this stage the project team will undertake the following activities which build on knowledge gathered at Inception Stage:

5.3.1 Review existing policies, plans and strategies

This review will include existing policies, plans and strategies produced by the Environment Agency and other stakeholders that are relevant to the CFMP.

5.3.2 Collate additional data

Any additional data and information identified as a result of consultation on the Inception Report should be collated to support the development of the CFMP.

5.3.3 Develop an understanding of the current flood risks and their management

During this activity, previously held perceptions of flood behaviour, land use, fluvial processes, distribution of risk to people and natural and built assets, and current and previous flood risk management practice should be challenged to ensure that a robust understanding is gained.

A proper understanding of catchment processes is fundamental to the holistic development of the CFMP, although this does not necessarily require extensive additional studies. CFMPs should seek to maximise the use of existing data, information and knowledge from previous studies in the catchment.

Flooding from other sources, such as groundwater, sewerage network, highway and surface run-off, will be important considerations in some catchments. The impact of land management practices on flood generation may also be significant. All these issues must be considered in order to facilitate the understanding of flood risks in the catchment.

In flood risk management terms, the predominant, fundamental processes that need to be understood are the hydrology and hydraulics of the catchment and the natural and man-made drainage systems under flood conditions. It is important to take time to think about the hydrology of the catchment and what decisions can be based on hydrology alone before embarking on potentially costly and time-consuming hydraulic modelling and analysis.

This stage should make use of existing knowledge and experience where processes are well understood, particularly from flood risk mapping and modelling programmes. The extent of analysis and modelling specified must be appropriate to the high level nature of the CFMP output and designed to build on and refine current catchment understanding as gleaned from key knowledge holders. The level of detail and approach to hydrological and hydraulic modelling will vary for different catchments, but will always be broad scale. The analysis will be used to understand flood hydrology at a range of flood magnitudes consistent with the needs of flood damage estimation (i.e. at a range of levels of flood severity, including an extreme event). It will also test the sensitivity of the catchment processes to future changes. This will provide a broad understanding of the range and magnitude of potential changes to the flood regime in the future throughout the catchment.

The understanding of the catchment processes, land use and management should be developed into an assessment of flood risk. This assessment must reflect an appreciation of the nature and distribution of flood risk across the catchment. The flood risk assessment will need to consider where land, habitat, historic features or property is inundated from main rivers and ordinary watercourses, as well as flooding due to other factors such as tidal flooding, high

groundwater, overland flow, or restricted drainage. In many of these cases responsibility for flood risk management may not rest with the Environment Agency, but with other operators, such as local authorities, drainage boards or water companies.

Flood risk must be considered in terms of both the probability of an event occurring, and the impact (or consequences) of a flood when it occurs. Flooding from frequent minor events as well as catastrophic events must be considered. The impact of flooding must be considered in terms of:

- People (e.g. loss of life, injury and distress - relating to individuals and groups of people, especially groups particularly vulnerable to flood risk);
- The economy (e.g. loss or damage to buildings or infrastructure, and the disruption of activities (including agriculture) that have an economic value); and
- The environment (e.g. loss, damage or benefit to the overall riverine environment as well as to specific habitats and to biodiversity).

The stages in developing a broad understanding of flood risks in the catchment are:

- Evaluate available data on flood risks. In some areas flood risk assessments may already have been carried out.
- Determine current levels of flood risk taking into account the existing risk reduction measures (including flood defence systems) and management actions taken to reduce flood risk. This will require an understanding the extent of flood defence infrastructure (assets) their condition, type and life expectancy, as well as flood warning arrangements and other measures that have been implemented to reduce the probability or consequences of flooding.

Flood risk should be expressed in terms of:

- The expected annual economic damage;
- The population affected and the social vulnerability of populations affected by flooding. Given the difficulty in estimating the actual risk of injury or loss of life, information on population affected gives some indication of the potential significance of health and safety risks (see 'Scheme Prioritisation System' (Defra, 2002));
- The broad environmental impacts (both positive and negative)

The above information should be interpreted to identify and record those areas where significant levels of flood risk already exist.

Volume 2 provides further guidance on assessment of flood risk for CFMPs.

5.3.4 Review and understand the environmental and social issues, constraints and opportunities in the catchment.

Where practicable, the CFMP must also aim to help deliver the environmental objectives and address environmental problems within the catchment. This is a fundamental requirement of the SEA Directive, which has been integrated into the CFMP process to help optimise its contribution to sustainable development. So, for example, where flood risk management and water level management influences habitat quality or ecological water quality, it will be essential to appreciate the impacts on these nature conservation assets and potential opportunities for habitats, in order to appraise alternative policy options whilst developing the CFMP.

Through effective stakeholder participation, and consideration of the wider social agenda, the CFMP can also make a significant contribution to achieving the broader objectives of sustainable development: equity, social inclusion and engagement in decision making (e.g. regeneration, sustainable communities, partnerships).

5.3.5 Develop scenarios for how the catchment may change in the future

The development of potential catchment change scenarios should reflect possible futures

looking 50 to 100 years ahead, drawing upon the findings of the Government's Foresight project. Whilst it is not possible to understand in detail what will occur in 50 to 100 years time, general trends can be projected to determine the scale of change that would affect flood risk in the catchment.

Future scenarios should be developed from the analysis of data and information collected as part of this stage. Scenarios will comprise of combinations of the following:

- Urban development, both in the catchment and river corridor
- Change in land use and land management practice in the catchment
- Climate change, focussing specifically on the impact on flood risk with respect to people and the natural and built environment.

Scenarios are used to develop and test the sustainability of alternative CFMP policies against the range of likely futures.

Scenarios will be developed in this stage for consultation with key stakeholders. Analysis of scenarios will follow in the next CFMP stage when scenarios have been updated on the basis of consultee feedback.

5.3.6 Identify draft objectives for the CFMP

The CFMP policy development and appraisal process needs to be guided by a set of specific and *relevant* objectives that apply to the catchment. These draft objectives help inform the development and appraisal of policy options, and provide a focus for discussing and weighing up the importance of the various issues (sometimes conflicting) that are raised by the stakeholders during plan formulation.

Draft objectives must relate to flood risk management within the catchment, drawing from, and expanding on, the list of generic objectives in section 2.2. Further guidance on objective setting is provided Volume 2.

5.3.7 Produce the Scoping Report

The Scoping Report has three main functions:

- It should be a sufficiently informative document on flood risk management issues to be disseminated to consultees with the aim of seeking feedback on the draft catchment objectives and future scenarios;
- It should establish the work required for delivery of the draft and final plan, and
- It should facilitate active stakeholder participation in the development of the CFMP.

5.3.8 Issue Scoping Report for Consultation

The Steering Group should approve the Scoping Report for issue in accordance with the Communication Plan.

The Consultees should be asked to constructively examine the issues raised in the Scoping Report and highlight any significant flood risk management, environmental and social issues that may have been overlooked. In particular, consultees should be asked to identify any major opportunities or constraints that need to be taken into account during policy development.

5.4 Stage 4 - Draft CFMP

During Stage 4, the project team will undertake the following activities to build upon the Scoping Report and develop the draft CFMP.

5.4.1 Review consultation responses

In light of consultation responses, the CFMP risk assessment, objectives and future scenarios must be updated.

5.4.2 Finalise future scenarios

The possible future scenarios identified in the Scoping Report need to be finalised in response to feedback from the consultation exercise. The Steering Group should agree the final scenarios to be used for assessing the future flood risk in the catchment and for policy appraisal.

5.4.3 Develop an assessment of future flood risk under different scenarios

The flood risk assessment developed within the Scoping Stage must now be extended to consider what might happen under the various future scenarios. The aim is to determine future levels of flood risk for the scenarios identified, with respect to social, environmental and economic aspects.

5.4.4 Identify opportunities and constraints for managing flood risk in the catchment.

To establish the most appropriate CFMP policies it is essential that key catchment opportunities and constraints to change flood risk management practices to provide multiple benefits are identified and taken into consideration through the CFMP appraisal process. Examples of opportunities and constraints are given below.

Opportunities, at the broad scale, may include:

- restoration of fluvial systems (e.g. rivers and floodplains) to reduce the peak flow downstream;
- more beneficial management of existing wetlands for nature conservation (through revised water flow regimes);
- creation of Biodiversity Action Plan (BAP) habitats;
- strategic changes in existing flood defence or other infrastructure (e.g. managed re-alignment to increase floodplain storage); and
- alternative water management regimes to support recreation and urban or rural regeneration.

Unless they are taken into account in the appraisal process, the potential economic, cultural and environmental benefits of fluvial assets will not be realised, and opportunities for sustainable development of the catchment could be missed.

Constraints may include natural fluvial processes, the location of existing and committed developments and infrastructure, the condition of the existing defence infrastructure, or the needs of other river/catchment users. Unless they are taken into account in the appraisal process, a preferred policy may be unacceptable or unsustainable.

Opportunities and constraints should be identified via four main sources:

- knowledge and information from the stakeholders (including statutory bodies).
- feedback from consultation on the Scoping Report;
- existing catchment data and information (including the specific CFMP objectives); and
- future predictions and scenarios (e.g. models).

The former should act as the key source of information. In particular, stakeholders should contribute detailed knowledge of existing plans such as the Statutory Development Plans, Local Environment Agency Plans, Biodiversity Action Plans and Catchment Abstraction Management Strategies. This knowledge should enable the majority of opportunities and constraints to be identified. Existing reports and data will be a useful means of verifying and supplementing stakeholder knowledge.

The importance of public needs is emphasised. A common perception is that improved flood risk management entails new/improved flood defences. The construction of defences will not prevent flooding entirely. CFMPs will support a strategic approach to tackle the causes of flooding and set the policies that will lead to more sustainable measures to reduce the likelihood and impacts of future floods. Flood defences will always be an important element in the management of flood risk, particularly as climate changes are altering the extent and nature of flooding. There is a need to change public perceptions of flooding and avoid raising unrealistic expectations at this stage of flood risk management planning by addressing issues sensitively.

Since the main aim is to reduce flood risks, the CFMP should avoid being unnecessarily

distracted by unrealistic objectives whilst being receptive to the opportunities that could be offered by joint projects, in particular those that realise multiple benefits.

5.4.5 Finalise the Specific Objectives for the CFMP

The draft objectives identified in the Scoping Report should be reviewed in light of the responses to the consultation and the specific objectives for the CFMP agreed by the Steering Group. These objectives will be used for policy development and appraisal.

5.4.6 Identify Policy Options and Policy Units

CFMPs aim to identify the most sustainable approach to flood risk management in a catchment by setting long-term policies for specific locations or areas within the catchment (known as a Policy Unit). Policy Units are determined through analysis of the catchment vision, flood risk assessments and issues, such that one of six generic flood risk management policies (as listed in Box 3) can be assigned to the Policy Unit. The Policy Units should not overlap, however one policy unit may be surrounded by another.

Box 3 Generic Flood Risk Management Policies

1. No active intervention (including flood warning and maintenance). Continue to monitor and advise.
2. Reduce existing flood risk management actions (accepting that flood risk will increase over time)
3. Continue with existing or alternative actions to manage flood risk at the current level (accepting that flood risk will increase over time from this baseline)
4. Take further action to sustain the current level of flood risk into the future (responding to the potential increases in risk from urban development, land use change and climate change)
5. Take further action to reduce flood risk
6. Take action to increase the frequency of flooding to deliver benefits locally or elsewhere (which may constitute an overall flood risk reduction, e.g. for habitat inundation)

It is important to note that at this strategic level CFMP policies are concentrating on determining whether flood risk should increase, decrease or remain the same in an area, but not to determine the specific measures required to manage the risk. However, to improve the robustness of the policy appraisal it may be necessary to consider the generic responses that are most likely to be selected to deliver the policy. The appraisal of specific measures to deliver the CFMP policy will be undertaken at strategy or project level. The CFMP can guide these future stages by considering and suggesting possible strategic opportunities (responses) that can be identified at a catchment scale such as greater attenuation of flow or changes in land management practices that would be a means to achieving the selected policy for an area.

5.4.7 Appraise alternative policies against the specific CFMP objectives

The development of robust CFMP policies requires the analysis of a large quantity of information and recording it in a transparent and auditable manner. Policy appraisal will be based upon a multi-criteria analysis for a sustainability appraisal that meets the requirements of SEA. Volume 2 describes the method for appraisal of policies against the catchment objectives for each policy unit.

The use of objectives in policy development and appraisal is an iterative process requiring:

- Definition of policy drivers for each policy unit – these are effectively the highly ranked, or priority, objectives – the ones that must be achieved if possible that were stated in the Scoping Report. These policy driving objectives will indicate what the flood risk management needs of the key assets are and may allow the removal of certain 'generic' policies as being inappropriate for consideration. These objectives should encompass a sufficient breadth of relevant environmental parameters, thus ensuring significant implications of the policy options can be reflected in the appraisal

- Predict the effects of alternative policy options. Here, it is important to quantify and qualify the changes to the environmental baseline that are predicted to arise as a result of the alternative policy options. To do this it will be necessary to specify the timing, scale, frequency and reversibility of the change being considered (e.g. by expressing the policy objectives in terms of targets).
- Appraisal of these effects against the objectives will identify which options are more likely to contribute to achieving the stated objectives. The appraisal needs to be undertaken so as to facilitate the selection of preferred policies.

The specific measures for delivering the policies will not be tested or appraised, as further information will usually need to be gathered to form a robust business case as part of a Strategy Plan or project. Neither the costs of delivering the policy, or the funding available for delivery, will be known at this level. However, the policies need to be feasible in the context of the scale of the problem (i.e. current and future flood risk). It may therefore be appropriate to consider the use of generic responses, or scale of responses, drawing upon information from existing studies and strategy plans on the likely type of response to deliver the policy.

Where the magnitude of flood risk (in economic terms) is not significantly greater than the current expenditure on flood risk management measures in that part of the catchment, care should be taken in suggesting that the policy should be to take additional action to reduce the risk. In these situations, the Environment Agency will be unlikely to be able to fund such work, unless there are significant environmental or social risks to support the case for further action. The scale of the expected annual damages for each policy unit (£EAD/km^2) will also influence the actions arising from the CFMP. For example, if the scale of risk is such that expenditure of say £100,000 could only be justified (purely in economic terms), then it is inappropriate to propose further large scale detailed studies such as a Strategy Plan. In these situations, specific targeted projects may be more appropriate to provide local flood risk reduction measures such as improved flood warning and emergency response arrangements, local flood protection products, or enhance maintenance to existing defences.

The Environment Agency will bid for funding to support their actions arising from the CFMP from national grant-in-aid, where the priority, based on flood risk, will be assessed alongside actions arising from other CFMPs. Other funding streams will also be sought to deliver actions arising from the CFMP to maximise social and environmental benefits.

5.4.8 Selection of Preferred Policy

Following policy appraisal, the project team will need to work closely with the Steering Group to select the preferred long-term flood risk management policies and define the area (i.e. Policy Unit) over which they will apply.

Policy selection may require an iterative approach as a policy to change flood risk in one area may impact (beneficially or detrimentally) upon flood risk elsewhere. Future changes in catchment processes/flood risk may indicate the need for particular emphasis on flexible and resilient policies.

The decision making for the CFMP must be clear, robust and auditable. In most cases a clear preferred policy for each policy unit should emerge. In other cases, this may be difficult to achieve. In order to select a preferred policy for each policy unit, one may have to resolve trade-offs and conflicts. To resolve these trade-offs and conflicts, it may be necessary to work at a level of detail of information and analysis that lies beyond the scope of the CFMP process. Should this be the case, the analysis of trade-offs and the resolution of conflicts (a process that involves consultation with stakeholders) may need to become one of the actions recommended by the CFMP.

5.4.9 Produce Draft CFMP

The draft CFMP should present the information and analysis from the stages in the CFMP development. It should, where possible, indicate the preferred long-term policy for each policy unit within the catchment. Where this is not possible, prospective policies should be indicated with reasons why it has not been feasible to identify a preferred policy.

To facilitate and focus the consultation it is important that the basis on which preferred or prospective policies have been derived is clearly explained, and the risks and uncertainties

associated with each policy. Policy summary tables, as shown in appendix B, will help to draw together the information on preferred policies and present it as a summary within the draft CFMP.

The Draft CFMP should include a proposed Action and Monitoring Plan (see Box 1), which represents a prioritised set of actions for future studies, Strategy Plans and other projects (including research or studies to address identified uncertainties associated with CFMP policies). These should be prioritised with reference to the scale of flood risk and the specific CFMP objectives.

This is the first step towards implementation of the CFMP flood risk management policies. If necessary, Action and Monitoring Plans should look beyond the boundaries of individual CFMPs to link with recommendations in adjacent CFMPs. The Action and Monitoring Plan should seek to identify where further studies and investigation is essential and appropriate in order to determine how the CFMP policies can be delivered. Other actions should include delivery projects where the flood risk management responses to the preferred policies do not require further extensive studies, or where they are obvious.

5.4.10 Issue the Draft CFMP for Consultation

The Steering Group will be responsible for approving the Draft CFMP for issue in accordance with the Communications Plan.

The aim of consultation at this stage of the process is to obtain widespread views and reach a consensus on the draft CFMP policies for flood risk management. It is important that consultees are made aware of the programme for response and informed of the way in which their contributions may influence CFMP modification and finalisation (i.e. through feedback into the formulation and appraisal of CFMP policies).

Detailed guidance on how to undertake consultation on the Draft CFMP is provided in Volume 2 – Procedural Guidance.

5.5 Stage 5 - Finalise CFMP

Once consultation feedback on the Draft CFMP has been received, the project team, working closely with the Steering Group, will:

5.5.1 Review consultation responses and produce the final CFMP

Consultation on the Draft CFMP is likely to produce a range of opinions regarding the final CFMP flood risk management policies. Consideration of these opinions may result in the modification of the CFMP and, where possible, the resolution of conflicting viewpoints. Where consultees fundamentally disagree on the impact of particular policies, it is reasonable that they should provide the necessary supporting evidence, although in appropriate cases the Environment Agency could provide assistance. Resolving specific trade-offs and conflicts may be beyond the scope of the CFMP process and these should therefore be carried forward as outstanding issues to be resolved in subsequent Strategy Plans or projects.

5.5.2 Disseminate the final CFMP

Once finalised, the Steering Group, as representatives of the Environment Agency, local authorities and other key operating authorities, Defra/Welsh Assembly and English Nature, should agree the CFMP (complete with an Action and Monitoring Plan). The CFMP should then be disseminated amongst internal and external stakeholders, including the general public.

The CFMP should include a complementary set of preferred flood risk management policies with identified policy units. It should also record the responses received during consultation on the Scoping Report and Draft CFMP. The Environment Agency will retain background technical information gathered/analysed during the CFMP process (at an appropriate level of technical detail). Other outputs from the CFMP process are described in Box 1.

5.6 Follow-on Activities

The Steering Group should agree upon the follow on activities than will ensure that the Action and Monitoring Plan is developed further and implemented. This should include monitoring of

progress with the actions.

Future activities will need to be progressed as an outcome of the understanding gained through the development of the CFMP and may include studies and investigations, or projects, seeking to:

- change land use over a period of time for specific locations to reduce the impact of floods and provide space for flooding
- change existing flood defence infrastructure to reduce the frequency of flooding of specific assets, or changes to allow more frequent flooding of land dependent upon water and sediment
- improve the integrated drainage systems to reduce the frequency of urban flooding
- change land management to reduce the incidence and impact of rapid surface water run-off from rural areas (often called “muddy floods”)
- improve flood detection, forecasting and warning of the onset of flooding, specifically in terms of the accuracy, reliability and lead time for flood warnings
- work with communities to increase flood awareness and pre-flood planning in order to increase the use of local flood protection products and self-help when a flood occurs to reduce the damages and trauma of floods
- obtain further data to support longer term policy development at the next review of the CFMP (including research or studies to address identified uncertainties associated with current CFMP policies).

A monitoring programme should be established to review and report on the performance of CFMP flood risk management policies (e.g. in terms of their contribution to the reduction in flood risk over time and monitoring significant environmental effects) since this is a vital aspect of the CFMP process.

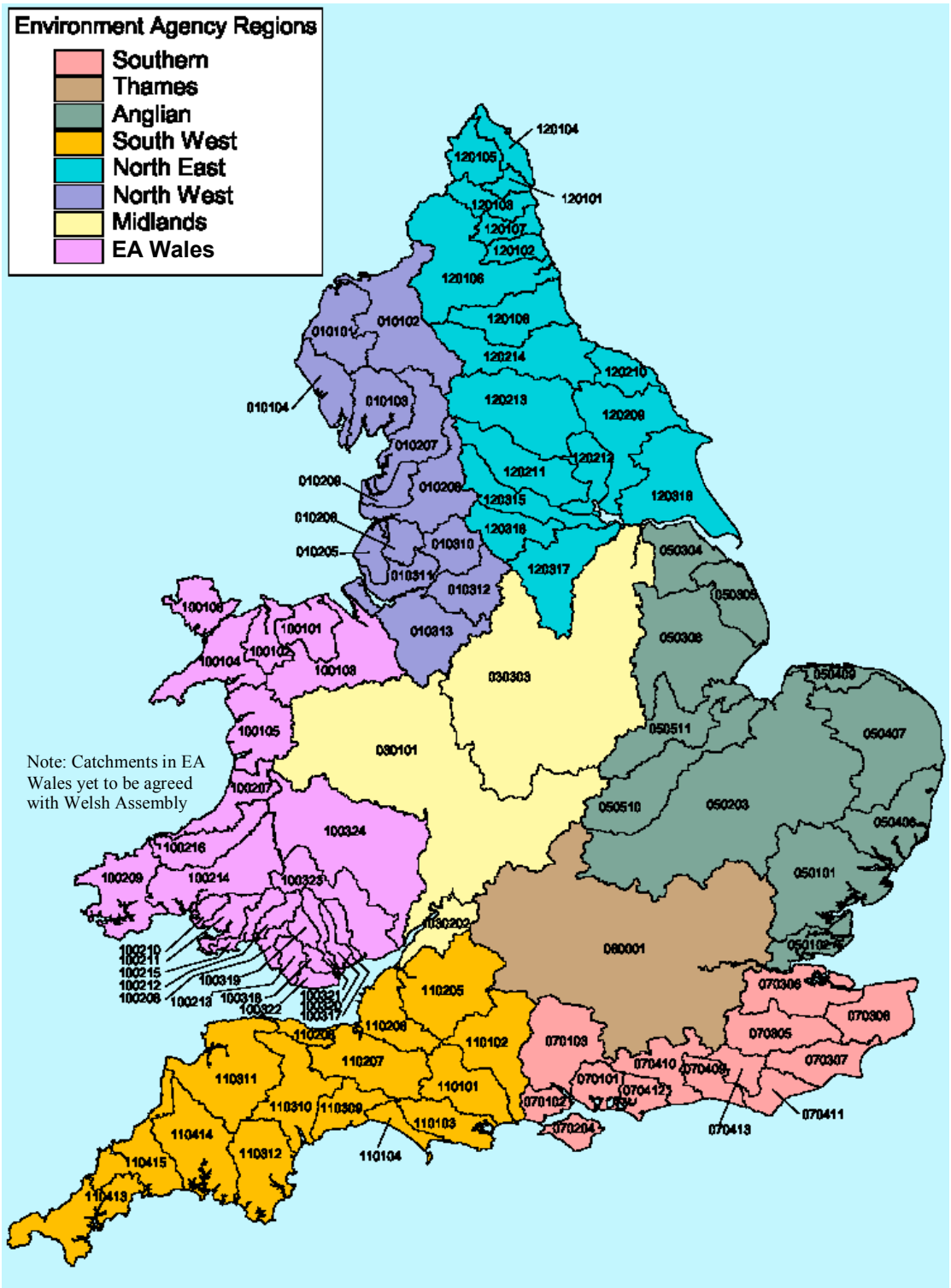
5.7 Review of the CFMP

Formal review of the CFMP should take place as appropriate to reflect significant changes in flood risk in the catchment or to inform or influence other plans, such as the Water Framework Directive River Basin Management Plans.

During a review, experience in applying the CFMP policies should be evaluated and CFMP datasets should be updated/expanded to incorporate the most up-to-date catchment information. Consideration should be given to the availability of new planning and modelling tools, the effects of recent significant flood events and urban development and advanced understanding of climate change or changes in national policy guidance. These factors may lead to revision of the CFMP policies for flood risk management (although fundamental changes should be rare if the initial CFMP is based on sound principles and reasonable understanding).

However, since the CFMP is a ‘living document’ it should be used and actively maintained by the Environment Agency between official revisions e.g. by updating or infilling databases with results emerging from further research/investigations identified as ‘follow-on activities’ within the original CFMP.

Appendix A: Plan of CFMP Catchment Boundaries



REFERENCE	CFMP NAME	REFERENCE	CFMP NAME
ANGLIAN		**NORTH WEST**	
050101	North Essex	010101	Derwent
050102	South Essex	010102	Eden
050203	River Great Ouse	010103	Kent/Leven
050304	Grimsby and Ancholme	010104	South West Lakes
050305	Louth Costal	010205	Alt/Crossens
050306	River Witham	010206	Douglas
050407	Broadlands Rivers	010207	Lune
050408	East Suffolk	010208	Ribble
050409	North Norfolk	010209	Wyre
050510	River Nene	010310	Irwell Pilot
050511	River Welland	010311	Mersey Estuary/Sankey/Ditton
		010312	Upper Mersey/Glaze
MIDLANDS		010313	Weaver/Gowy
030101	Severn Pilot		
030202	Severn Tidal Tributaries	**SOUTHERN**	
030303	Trent	070101	East Hants
		070102	New Forest
NORTH EAST		070103	Test & Itchen
120101	Aln	070204	Isle of Wight
120102	Blyth and Coastal Streams	070305	Medway (Upper) Pilot
120103	Coquet	070306	North Kent Rivers
120104	Northumberland Coastal Streams	070307	Romney & Rother
120105	Till and Breamish	070308	Stour
120106	Tyne	070409	Adur
120107	Wansbeck	070410	Arun
120108	Wear	070411	Cuckmere, Pevensey & Combe Haven
120209	Derwent Pilot	070412	Ems & West Sussex Rifes
120210	Esk	070413	Ouse
120211	Nidd / Wharfe		
120212	Ouse	**EA WALES**	
120213	Swale / Ure	100101	Clwyd
120214	Tees	100102	Conwy
120315	Aire	100103	Dee Pilot
120316	Calder	100104	Llyn
120317	Don / Rother	100105	Meirionydd
120318	Hull and Coastal Tributaries	100106	Ynys Mon
SOUTH WEST		100207	Aeron, Clarach, Rheidol & Ystwyth
110101	Frome & Piddle	100208	Afan
110102	Hampshire Avon	100209	Eastern Cleddau & Western Cleddau
110103	Stour	100210	Gwendraeth
110104	West Dorset	100211	Loughor & Solva
110205	Bristol Avon	100212	Neath
110206	North + Mid-Somerset	100213	Ogmore
110207	Parrett	100214	Taf & Tywi
110208	West Somerset	100215	Tawe
110309	East Devon	100216	Teifi Pilot
110310	Exe	100317	Ebbw
110311	North Devon	100318	Ely Pilot
110312	South Devon	100319	Rhondda
110413	East Cornwall	100320	Rhymney
110414	Tamar	100321	Taff
110415	West Cornwall	100322	Thaw + Cadoxton
		100323	Usk
THAMES		100324	Wye
060001	Thames		

Appendix B: Example of CFMP Policy Summary Table

Policy Unit 1	Policy Unit 1 covers the reach of the River X from Y point to Z point as shown on Map Q. It includes the major conurbation of Town A.
Problem / Risk	Town A is situated within the flood plain in the lower reaches of the River X. Development in the town during the 1950's within the floodplain increased flood risk in the area, with 500 properties now at risk. A flood alleviation scheme was constructed in the late 1980's to provide protection to 100 of these properties up to the 50:1 chance (2%) event (these defences are regularly maintained and are in good condition). However, there remains a residual flood risk from more severe events. There are problems associated with the direct, rapid run-off from the xxx hills on the western fringe of the policy unit.
Policy	Take further action to reduce flood risk
Justification	The scale of flood risk in town A is such that the estimated damages to the residential properties are £XM for a 10:1 (10%) chance event, £XX for 50:1 (2%) chance event, and £XXX for the 100:1 (1%) chance event. It can be seen that the damages principally arise from the more extreme events. The 1% flood would affect approx 200 houses and other major infrastructure in the town. The environmental and social consequences of flooding are significant in this catchment because …. The expected annual damages in town A are £xxm/yr and amount to xx% of the total damages within the catchment. The expected annual damages could increase by xx% by 2020 as a result of the impacts of climate change and further development planned within the catchment. The other consequences of flooding in terms of the environmental and social impacts are ….. This policy supports sustainability (economic, social and environmental) through …. (Insert brief summary of the policy appraisal against objectives, and explain which objectives are met by this policy)
Catchment-wide Opportunities & Constraints	Preliminary investigations into the topography, soils, existing land use and current land management practices and nature of the flood hydrograph / flood flows have indicated that there may be an opportunity to reduce flood risk by 15% through a change in land management to increase attenuation within the upper catchment. The SSSI upstream of town A, which is currently not in favourable condition, could benefit from a change in existing flood risk management to increase the frequency of flooding with opportunities explored for the expansion of the overall wetland area through targeting environmental stewardship schemes. No expansive developments are currently planned within this catchment within the next 20 years, although development in the mid-catchment would have a significant impact on increasing flooding in Town A. If further development is necessary, from a flood risk perspective, it would be best located downstream of town A or elsewhere within the upper catchment, such as within Policy Unit 8.

Actions	The scale of the expected annual damages indicates that the Environment Agency should develop a Strategy Plan for town A within the next 5 years to consider what combination of specific flood risk management measures can be implemented to reduce flood risk in the town. The Agency and IDB to jointly work with agricultural industry to seek change of land management practices (e.g. through the Environmental Stewardship Higher Level Scheme) to reduce the direct run-off from the hill slopes in area R into the river system within the xxx levels, which is currently introducing significant sediment and diffuse pollutants into the drainage network within the IDD. Highway Authority to explore opportunities (for the longer term) for the removal of capacity restrictions at points Y (riverside road bridge), which raise flood levels locally within the centre of Town A. English Nature to investigate and advise on water level / flood regime requirements for SSSI at XX to promote “favourable status”.
Risks, Uncertainties & Dependencies	The damages to town A from flooding are estimates that are considered sufficiently accurate to justify the cost of further investigations into the appropriate intervention to reduce flood risk. More detailed assessments will be required to identify the actual level of investment that can be justified and its relative priority with other flood risk reduction work.

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Key Terminology used in the Guidance

The CFMPs and the Policy Guidance are structured around some key terms, which have been identified and defined below.

Appraisal

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

Benefits

Those positive quantifiable and unquantifiable changes that a plan will produce, including damages avoided.

Biodiversity Action Plan (BAP)

An agreed plan for a habitat or species, which forms part of the UK's commitment to biodiversity. For further information consult the BAP website:
http://www.ukbap.org.uk/aboutBAP.htm

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). For further information consult Her Majesty's Stationary Office website:

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

Catchment

A surface water catchment is the total area that drains into a river. A groundwater catchment is the total area that contributes to the groundwater component of the river flow.

Catchment Abstraction Management Plans (CAMS)

CAMS are strategies for management of water resources at a local level. They will make more information on water resources allocation publicly available and allow the balance between the needs of abstractors and those of the aquatic environment to be determined in consultation with local interested parties.

Catchment Flood Management Plan (CFMP)

Catchment Flood Management Plans (CFMPs) 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.

Catchment Opportunities and Constraints

Key catchment issues, which are identified based on a combination of catchment characteristics (e.g. designated areas requiring protection or enhancement), government policy/targets (e.g. Defra 'High Level Targets', 1999) and/or catchment initiatives (e.g. existing local authority strategies). Catchment policies should aim to 'take account of constraints' and 'promote opportunities' through the CFMP appraisal framework (economic, environmental and social). Designated sites have Water Level Management Plans (WLMPs) that set out water level management needs in certain parts of the catchment and some floodplain areas have nature conservation or heritage interest that benefit from increased incidence of flooding.

Catchment Policies

The CFMP policies for the long-term sustainable flood risk management within the catchment.

Communication Plan

A plan that sets out the CFMP consultation programme, and specific arrangements for internal (Environment Agency) and external consultation.

Consultation Group

A group of consultees representative of the stakeholders who should be consulted on the CFMP as agreed with the Project Board. The Consultation Group should be identified within the Communication Plan.

Countryside and Rights of Way Act (2000)

This Act requires local Highways Authorities to publish a Rights of Way improvement plan by 2005, assessing current and future needs and accessibility. The plans need to be developed within the context of other strategies in the region.

Defra

Department for Environment, Food and Rural Affairs. The department of central government responsible for flood management policy in England.

Defra PAG3 document

Defra's PAG (project appraisal guidance) documents set out the criteria which determine whether or not a scheme is eligible for grant aid. PAG 3 relates to economic appraisal (based on cost of the scheme verses the damages that the scheme will avoid). The other PAG documents are;

1. Overview
2. Strategic planning and appraisal
3. Approaches to risk
4. Environmental Appraisal

DG5 register

Register held by water companies on the location of properties at risk of sewage flooding problems.

Environment Agency

Non-departmental public body responsible for the delivery of 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.

1. 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 – for business, anglers, the boating community and other users of the waterways, farmers, planners and all sections of the community.
2. An enhanced environment for wildlife: the Environment Agency will ensure that its activities and those it authorises do not threaten key species and habitats;
3. Cleaner air for everyone
4. 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;
5. Restored protected land with healthier soils.
6. A 'greener' business world
7. Wiser sustainable use of natural resources
8. Limiting and adapting to climate change
9. Reducing flood risk: the Environment Agency will improve flood defences and information on flood risks

For further information refer to the Environment Agency's website http://www.environmentagency.gov.uk/aboutus/286233/106775/106809/

Environmental Impact Assessment (EIA)

The process, by which the likely impacts of a project upon the environment are identified, collated, measured and assessed to determine their significance. The analysis of predicted environmental effects enables different options to be considered, together with identification of the scope for optimising positive effects and mitigating negative effects during the project design.

Environmentally Sensitive Areas (ESA)

ESA schemes were introduced by the Ministry of Agriculture, Fisheries and Food (MAFF; predecessor to Defra) in 1987 and are designated under the provisions of sections 18 and 19 of the 1986 Agriculture Act and Environmentally Sensitive Area (Stage II) Designation (Amendment)(No2) Order 2001. They are governed by Defra and offer incentives (on a 10 year agreement with a 5 year break clause) to encourage farmers to adopt agricultural practices which would safeguard and enhance parts of the country of particularly high landscape, wildlife or historic value.

Further detail can be found on Defra's website:

http://www.defra.gov.uk/erdp/schemes/landbased/esas/esasindex.htm

Flood Alleviation Scheme (FAS)

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

Flood Defence

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

Flood Estimation Handbook (FEH)

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

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.

Flood Risk

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

Flood Risk Management

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.

Fluvial

Pertaining to a watercourse (river or stream**Generic Catchment Policies** As defined in box 3 in section 5.4.4.

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

The sediment erosion, deposition of transport processes that create the topography and shape of a river and its floodplain.

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 as the Conservation (Natural Habitats, etc.) Regulations (1994)

The main aim of EC Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the Habitats Directive) is:"...to contribute towards ensuring biodiversity through the conservation of natural habitats and of wild fauna and flora in the European territory of the Member States to which the Treaty applies" (Article 2).

It establishes a system of protection for certain fauna, flora and habitats deemed to be of European conservation importance.

The 24 Articles of the Directive include a range of measures including conservation of features in the landscape that are important for wildlife, the protection of species listed in the Annexes from damage, destruction or over-exploitation, and the surveillance of natural habitats and species. The most stringent obligations relate to the selection, designation and protection of a series of sites, to be called Special Areas of Conservation (SACs).

These SACs, with Special Protection Areas (SPAs), classified under the Birds Directive, will be known as the Natura 2000 network.

The Habitats Directive is implemented in the UK through the Conservation (Natural Habitats &c.) Regulations 1994 and the Conservation (Natural Habitats &c.) (Northern Ireland) Regulations 1995, as amended. For further information consult Her Majesties stationary office website:

http://www.hmso.gov.uk/si/si1994/Uksi19942716_en_1.htm

Hydrological Model

Estimates the flow in a river arising from a given amount of rainfall falling into the catchment. Such models typically account for factors such as catchment area, topography, soils, geology and land use.

Inception Report

Provides a detailed description of the work undertaken during the CFMP Inception phase. This includes a summary of catchment data collection and preliminary understanding of the main issues to be considered for effective flood risk management during subsequent phases of the CFMP process. The Inception Report is not a consultation document.

Indicative Floodplain Map (IFM)

A map showing the Environment Agency's best estimate of the extent of the natural floodplain without taking into account flood defences. These cover all main rivers and some ordinary watercourses. The floodplain is defined as the area having a 1% p.a. risk of fluvial, or a 0.5% p.a. risk tidal inundation. The IFM will be replaced by a new Flood Map in October 2004.

Indicative Standard of Protection

The range of level of protection to be considered for flood defences, based upon the use of the land being protected. They do not represent any entitlement to protection or minimum level to be achieved.

Land Use

Various designations of activities, developments, cropping types, etc for which land is used.

Land Management

Various forms of activities relating to agricultural, forestry, etc practice.

Local Authority Development plans

These statutory land development plans generally cover a 10-year period from the date of their adoption. However, local authorities currently review these plans on a 5-yearly basis. A District Council and a Unitary Authority will produce a Local Development Framework and a County Council will produce a Regional Spatial Strategy. A Regional Spatial Strategy guides the Local Development Framework of several District Councils.

Local Environment Agency Plan (LEAP)

An Environment Agency non-statutory plan based on the river basin (or sub-catchments or groups of smaller catchments) providing environmental baseline information and actions/objectives for that river basin (largely superseded the National Rivers Authority's Catchment Management Plans (CMPs)).

Local Plan

A statutory plan produced by district councils (including those known as city or borough councils) which are not unitary authorities. It is a detailed written statement and ordnance base describing and illustrating proposals at a local level. It may include policies and proposals for specific sites.

Main River

Watercourses defined on a 'Main River Map' designated by Defra. The Environment Agency has 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)

Modelling and Discussion Support Framework (MDSF)

The Modelling and Decision Support Framework - a GIS based decision support tool developed specifically to assist the CFMP process through automation of parts of the analysis.

National Flood and Coastal Defence Database (NFCDD)

The NFCDD is a requirement under the Defra and NAW High Level Targets to develop a single easily accessible and definitive store for all data on flood and coastal defences, available to all Operating Authorities in England and Wales.

National Nature Reserves (NNRs)

National Nature Reserves are designated by English Nature for broad ecological value, in order to protect the site, secure appropriate management, and provide scientific research and education. NNRs have Reserve Management Plans that are updated every 5 years.

Local authorities have the power to designate Conservation Areas in any area of "special

Ordinary Watercourses

Non-main rivers (see also Main Rivers above). Maintenance and operational responsibility for Ordinary Watercourses is vested in the landowner.

Planning Policy Guidance Note 25: Development and Flood Risk (PPG25)

One of a series of Planning Policy Guidance notes (PPGs) issued by DTLR to advise local planning authorities and developers. While PPGs are not statutory, planning authorities are obliged to consider them in preparing plans and determining planning applications. PPG25, issued in July 2001, raises the profile of flood risk, which should be considered at all stages of the planning and development process and on a catchment-wide basis. It emphasises the need to act on a precautionary basis and to take account of climate change. It provides advice on future urban development in areas subject to flood risk, subjecting proposals to a sequential response (dependent on the degree of risk) and promotes the concept of Sustainable Drainage Systems (SuDS) in new development or re-development.

For further information please refer to the Office of the Deputy Prime Ministers planning website:
http://www.planning.odpm.gov.uk/ppg25/

Problem Areas

Areas within the catchment identified as have a significant flood risk.

Probability of Occurrence

The probability of a flood event being met or exceeded in any one year.

Project Board

The Project Board instigates the production of CFMPs, and is responsible to the Environment Agency for resource and programme management.

Return Period

The average interval in years between events of similar or greater magnitude (e.g. a flow with a return period of 1 in 100 years will be equalled or exceeded on average once in every 100 years). However, this does not imply regular occurrence, more correctly the 100-year flood should be expressed as the event that has a 1% probability of being met or exceeded in any one year.

Risk Assessment for Strategic Planning

RASP is a methodology for flood risk assessment that takes into account the presence and condition of flood defence systems.

Regional Planning Guidance (RPG)

Planning Guidance issued for a region such as the South West by the Regional Government Office. RPG sets out a range of public policies to manage the future distribution of activities in the region.

Risk Assessment

Considerations of the risks inherent in a project, leading to the development of actions to control, mitigate or accept them.

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. The links between SMPs and CFMPs are very important. For example, a CFMP could identify potential for recreation of floodplain wildlife habitats affected at the coast by a SMP. They are prepared by Coastal Defence Groups usually led by one of the adjoining Local Authorities. Further details are available from:

http://www.defra.gov.uk/environ/fcd/policy/smp.htm

Sites of Special Scientific Interest (SSSIs)

SSSIs are sites of International importance, providing the best examples of Britain's natural heritage; wildlife habitats, geology and landforms. Sites are identified using the Wildlife and Countryside Act, 1981.

Steering Group

The Steering Group oversees the production of the CFMP, and is expected to comprise key Environment Agency staff together with staff from other operating authorities or major stakeholders, where appropriate.

Strategy Plan

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.

Strategic Environmental Assessment (SEA)

The application of EIA to earlier, more strategic, tiers of decision-making policies, plans and programmes. The practical application of SEA is still in its infancy in the UK, but will become a statutory requirement when implemented through an EC Directive (anticipated in 2004).

For further detail please consult Defras Website: http://www.defra.gov.uk/environment/rtgea/6.htm

Surface Water

Water in rivers, estuaries, ponds and lakes.

Sustainability

Is a concept, which deals with mankind's impact, through development, on the environment. Sustainable development is 'development which the meets the needs of the present without compromising the ability of future generations to meet their own needs' (BrundHand, 1987)

The degree to which flood risk management options avoid tying future generations into inflexible or expensive options for flood defence. This usually includes consideration of other defences and likely developments as well as processes within a catchment. It should also take account, for example, of the long-term demands for non-renewable materials.

Sustainable Drainage Systems (SuDS)

A sequence of management practices and control structures designed to drain surface water in a more sustainable fashion than some conventional techniques (may also be referred to as sustainable drainage techniques).

Technical Advice Note 15 (TAN15)

Produced by the Welsh Assembly Government in 2004 to support the implementation of Planning Policy Wales on development and flood risk.

Water Framework Directive (WFD)

European Community Directive (2000/60/EC) on integrated river basin management. The WFD sets out environmental objectives for water status based on: ecological and chemical parameters; common monitoring and assessment strategies; arrangements for river basin administration and planning; and a programme of measures in order to meet the objectives.

For further detail consult the European Commission website: http://europa.eu.int/eur-lex/pri/en/oj/dat/2000/l_327/l_32720001222en00010072.pdf

Water Level Management Plan (WLMP)

A document setting out water level management requirements in a defined floodplain area (usually a SSSI) which is designed to reconcile different requirements for drainage.

Welsh Assembly Government

The Welsh Assembly carries similar duties for flood and coastal defence as Defra in England.

Wildlife & Countryside Act

The Wildlife and Countryside Act 1981 (as amended) is the principle mechanism for the legislative protection of wildlife in Great Britain. The Wildlife and Countryside Act is divided into four parts.

Part I is concerned with the protection of wildlife,

Part II relates to the countryside and national parks (and the designation of protected areas),

Part III covers public rights of way,

Part IV deals with miscellaneous provisions of the Act

The designation of protected species is included in Schedules 1, 5 and 8 of the Act, which list protected birds, protected animals and protected plants, respectively.