

**UPPER THAMES
CATCHMENT MANAGEMENT PLAN
DRAFT ACTION PLAN**

AUGUST 1995

(NB. will be normal glossy cover in final version)

UPPER THAMES CATCHMENT MANAGEMENT PLAN

ACTION PLAN

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VISION FOR THE UPPER THAMES CATCHMENT

The Upper Thames forms a unique and attractive part of our national heritage. Together with other water bodies within the catchment, the Upper Thames and its tributaries, are valuable as fisheries and for wildlife conservation, as a source of water for potable supply, and as a resource extensively used for recreation and navigation

To realise the potential value and optimise the use of the water environment within this catchment, the NRA will work in partnership with local authorities, environmental groups and other interested agencies. The Upper Thames CMP will provide an important focus for this partnership. The NRA's vision therefore is not only to maintain the existing values of the catchment, but also to:

- a) improve the landscape, conservation value and biodiversity of the water environment where opportunities exist;*
- b) improve access, information and visitor facilities for water-based recreation where this is sustainable, ie, where there will not be a detrimental effect upon the environment;*
- c) alleviate local riverside flooding of properties;*
- d) maintain, improve and develop fish stocks in order to facilitate their sustainable management;*
- e) protect and improve the water quality;*
- f) recognise and protect the strategic importance of the Thames National Trail;*
- g) ensure water resources are not only well managed but developed in a sustainable manner which does not adversely affect river flows or other environmental interests; and,*
- h) contribute to the management of the Cotswold Water Park area by providing planning advice and resources to monitor its effective implementation and to ensure the sustainability of the wildlife and natural resources.*

The proposed actions set out in this Action Plan will go some way towards securing the comprehensive protection and enhancement of the natural water environment of the catchment. While these proposed actions alone will not achieve the vision they will nevertheless form a sound basis for further actions in the future and contribute towards the realisation of the vision.

1.0 INTRODUCTION

- 1.1 The NRA was established in 1989 and is the principal organisation responsible for safeguarding and improving the water environment in England and Wales. It has statutory responsibilities for water quality, water resources, flood defence, fisheries, conservation, navigation and recreation. As Guardians of the Water Environment, the NRA has defined its role in the following mission statement:

Mission Statement

"The National Rivers Authority will protect and improve the water environment. This will be achieved through effective management of water resources and by substantial reductions in pollution. The Authority aims to provide effective defence for people and property against flooding from rivers and the sea. In discharging its duties it will operate openly and balance the interests of all who benefit from and use rivers, groundwater, estuaries and coastal waters. The Authority will be business like, efficient and caring towards its employees"

- 1.1 The NRA places particular importance on the future of the environment and on planning for the future of the environment through an integrated approach to river management. We recognise the need to work with local authorities, the local community, landowners, interest groups, industry and other agencies whose activities and uses interact with or impact on the water environment.

1.2 Catchment Management Planning

The water environment is subject to a wide variety of uses which invariably interact with and sometimes conflict with each other. The process of catchment management planning has been developed to help manage these interactions and conflicts for the overall benefit of the water environment and its users. Through catchment planning we establish a long term vision for the catchment. To meet this we set objectives for environmental improvement and prevention of future environmental damage whilst considering the many demands on the water environment in the catchment. Catchment Management Plans translate the principles set out in the mission statement into action. The plans describe the vision for each catchment, identify problems and issues and propose actions that may be taken to resolve them.

- 1.3 This document represents the Action Plan stage of the process and aims to describe the activities that the NRA and others will be undertaking over the next five to ten years. The Plan also provides the means of promoting two key aspects of environmental management - land use planning and water quality objectives. Land use planning is discussed in detail in Section 3 while water quality objectives are outlined in Appendix 1.

2.0 REVIEW OF PUBLIC CONSULTATION AND LIAISON

One of the objectives of Catchment Planning is to involve all interested parties in the planning for the future well being of a catchment. The NRA is therefore, committed to the concept of public consultation on all its CMPs.

- 2.1 Between April and June 1994 informal consultation took place with a wide range of 214 external organisations and local authorities prior to the Consultation Report being produced. The results of this informal process were fed into the Consultation Report so that it would produce "no surprises" when it was published and this seems to have been successfully achieved.
- 2.2 The Consultation Report was launched in January 1995, marking the start of the formal public consultation process, through press releases and radio interviews as well as by wide distribution to over 300 consultees for review and comment. This number was increased through the distribution of further copies to the same organisations, libraries, schools and within the NRA itself, so that around double this number were sent out in total.
- 2.3 Three public meetings were held as a part of the consultation process at Cirencester, Swindon and Lechlade. The aim of the meetings was to allow people the opportunity to discuss the range, adequacy and priorities in terms of issues identified for the catchment and also to obtain views on the catchment values. Display boards and posters were set up at these meetings and also at council offices and local libraries located throughout the catchment.
- 2.4 Two questionnaires were attached to the Consultation Report and aimed to encourage the public to respond broadly to all the issues in the CMP and not just their own areas of interest. This aim seems to have been achieved and the responses have provided useful comments which have been incorporated into this Action Plan as appropriate.
- 2.5 The response from the public was generally positive and constructive and the consultation exercise was deemed successful and worthwhile. The opportunity to get involved in shaping future NRA activity seems to be appreciated by the consultees and the activity plans which appear within this document have been greatly assisted by their input.

3.0 OVERVIEW OF THE CATCHMENT

- 3.1 The Upper Thames Catchment comprises all land which drains into the Upper Thames extending to and upstream of Buscot Lock together with its tributaries including the Rivers Churn, Coln, Ray, Key, Cole, Leach and the Swill and Ampney Brook. The length of the Main River (over which the NRA has statutory powers for flood defence) is 337 km and the total area covered by the catchment is approximately 1000 km². (See Figure 1)
- 3.2 The character of the catchment is one of contrasts. While the northern part of the catchment is predominately rural with the Cotswold Hills, designated as an Area of Outstanding Natural Beauty (AONB) and the Cotswold Water Park, the southern part is dominated by the urban settlement of Swindon (population 150,000). Other settlements within the catchment include Cirencester, Wroughton, Cricklade and Highworth.
- 3.3 The area is skirted along its boundary by the M4 motorway and the A40 trunk road crosses in the north. The remains of the Thames and Severn Canal can be found from Lechlade to the west, and further south are the fragmented remnants of the Wiltshire and Berkshire Canal and the North Wiltshire Branch Canal.
- 3.4 The Cotswold Water Park, currently split into an eastern and western section, is the largest concentration of gravel pits and associated land in Great Britain. It covers some 5,700 hectares of which almost 1,000 hectares is open water in the form of about 120 man-made lakes. The park straddles the boundary between Gloucestershire and Wiltshire and includes parts of the Cotswold and North Wiltshire Districts.
- 3.5 The catchment can be divided along the River Thames with all the tributaries to the north rising from the Cotswolds and fed by springs, while those to the south are associated largely with clay catchments or the urban conurbation of Swindon.
- 3.6 Water quality in the Upper Thames catchment ranges from "good" to "bad". The highest quality is to be found in the Cotswold rivers such as the Churn and the Coln, whereas a lower quality is found in the Ray and some of the smaller brooks and ditches.
- 3.7 Further details on the uses and status of the Upper Thames catchment area can be found in the Consultation Report.

Overview

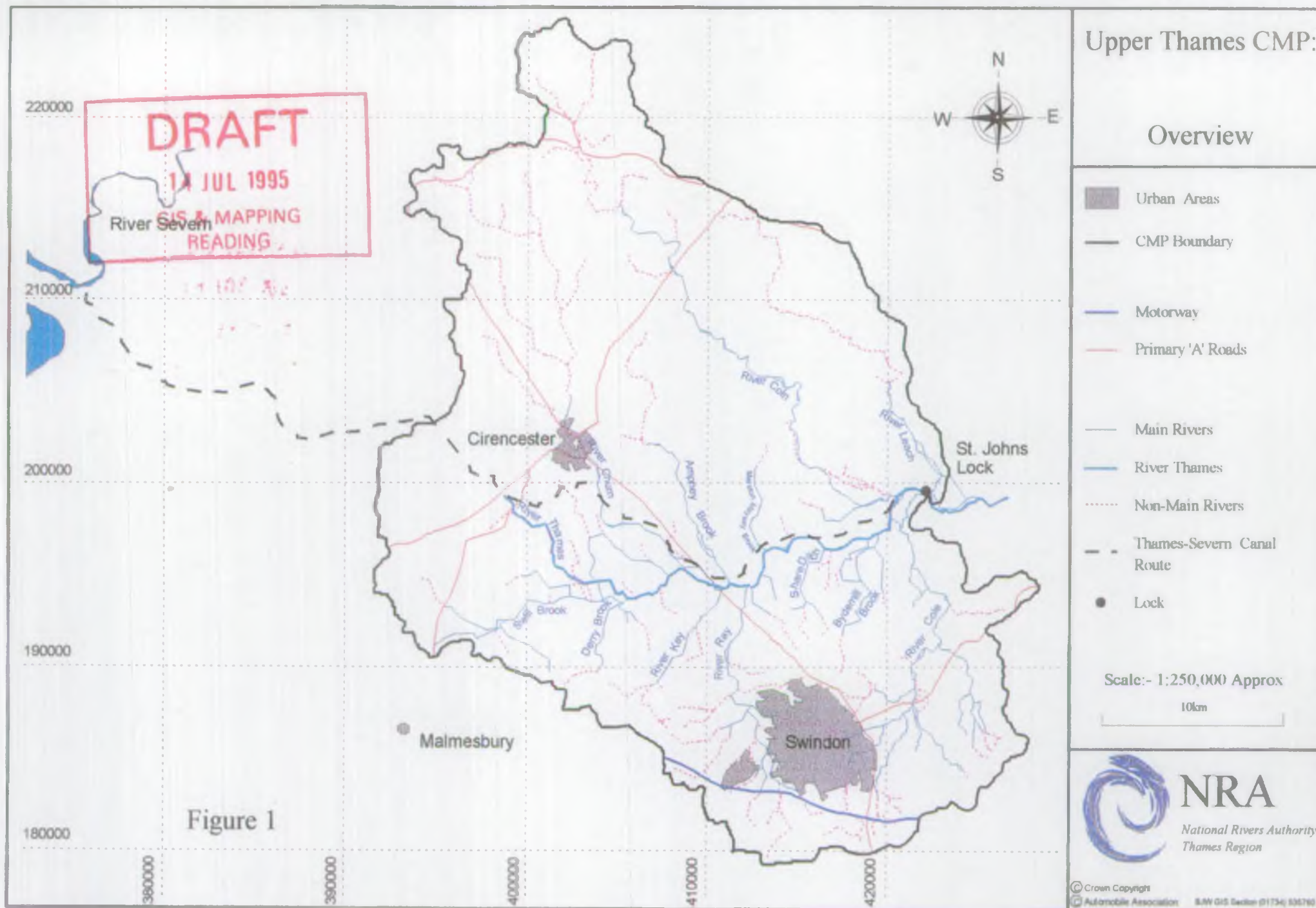


FIGURE 1

4.0 LAND USE AND THE WATER ENVIRONMENT

- 4.1 The broad objective of catchment management planning is to conserve and enhance the total water environment through effective land and resource management. In this way we can ensure that the needs of the present can be met without compromising the ability of future generations to meet their own needs - this approach is known as sustainable development. To achieve the objective of sustainable development all factors which may influence the water environment must be taken into consideration.
- 4.2 The NRA is well placed to influence some of the factors affecting the water environment particularly in relation to the river corridor itself. However, it has very little control over the mechanisms which determine land use activities on a catchment wide basis. This function is primarily the responsibility of Local Planning Authorities through the implementation of Town and Country Planning legislation.
- 4.3 Local authorities produce development plans which are statutory documents that set out the framework for land use change. These plans act as a key instrument when determining applications for planning permission, and are therefore an important tool in the protection of the water environment. The NRA works closely with the local authorities in the production of development plans, to encourage the inclusion of policies which reflect its concerns and responsibilities. A guidance document produced by the NRA entitled "Guidance Notes for Local Planning Authorities on the Methods of Protecting the Water Environment through Development Plans" has been helpful in setting out the issues which need to be included in development plans.
- 4.4 As a result of the promotion of NRA guidance and advice many of the local authority development plans which cover the Upper Thames Catchment Area now include comprehensive sets of policies which protect the water environment. This is an important step in achieving the common aim of sustainable development as it helps to reconcile the needs of economic development and effective environmental protection and enhancement.
- 4.5 The NRA TR is undertaking a strategic planning initiative called "Thames 21 - A Planning Perspective and a Sustainable Strategy for the Thames Region", which will provide a regional context for the preparation of CMP's by identifying strategic development issues including future development pressure points. Swindon and the Cotswold Water Park have been identified as pressure points within the Upper Thames catchment. The Cotswold Water Park is discussed in more detail in Appendix 2. "Thames 21" also provides a further set of principles and criteria against which NRA functional activities can be assessed for sustainable development. The NRA aims that the activities in this Action Plan meet similar sustainability criteria to policies promoted in statutory development plans
- 4.6 The NRA is able to constructively participate in the land use planning system process across all its functional interests and not just those related to its major functions of

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flood alleviation, water quality and water resources. It seeks to protect and enhance the landscape and wildlife conservation values of catchments where these values are influenced by water. This is done not just by working with local authorities and seeking to influence development plans but also by working with a wide range of other organisations whose cooperation is needed. More details on this are given in Appendix 3 (Landscape assessment) and in Appendix 4 (Conservation and opportunities for enhancement).

5.0 ACTIVITY PLANS

5.1 The activity plans in this report have been divided into two distinct sections; the first section deals with the activities which are a response to the issues identified in the Consultation Report while the second section deals with other NRA activities which may be of a more routine nature but are nevertheless essential for the future protection and enhancement of the water environment within the Upper Thames Catchment. Both sets of activity plans take into account the Environmental Objectives which were also set in the Consultation Report and which have been repeated at Appendix 5.

5.2 Issue Related Activities

A brief description of the issues is given below followed by the proposed activities set out in a tables which show the following information:-

- Organisations which would be responsible for the actions (Resp).
- An estimate of cost where available. This is indicative only and has been divided into four broad bands; Under £10,000 ; £10,000 - £50,000 ; £50,000 - £100,000; and over £100,000.
- A target timetable of the activity. It should also be realised that some actions will require feasibility studies and appraisal of options prior to work commencing. In some cases, depending on the outcome of these studies and investigations, further action may not be required. All participating organisations have limited resources and powers, and some work may take longer than indicated owing to funding availability, government policy and more urgent priorities.

Issue 1: River Flows and Levels

The drought of 1989-92 caused considerable public concern about river flows, levels, water quality and in-stream ecology in the groundwater-fed watercourses in the northern part of the catchment. The public attributed the flow reductions to abstractions from the groundwater for public water supply. There is therefore a demand for further investigation and action on the issue.

Activity	Resp.	Cost (£K)	1995	1996	1997	1998	1999
Monitor changes in aquatic plants and undertake research. (Follow National Policy development)	NRA	10-50					
Establish River Flow Objectives	NRA	N/A					

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Carry out investigations on the Ampney Brook and Churn to determine severity of effects of abstraction and options for improvement	NRA	10-50					
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Issue 2: Meysey Hampton Great Oolite Abstraction Licence

Groundwater abstraction in the catchment needs to be managed to keep the impact on river flow within acceptable bounds. The current (TWUL) abstraction licence for the Meysey Hampton Great Oolite (GO) source expires in January 1998. The NRA will then review the location and quantity of abstraction from this aquifer to ensure this. In addition to Meysey Hampton (GO), the effects of abstractions at Latton and Baunton also need to be assessed.

Activity	Resp.	Cost (£K)	1995	1996	1997	1998	1999
Meysey Hampton Renewal of existing licence variation (expires Dec 1997) - desk study of existing data: review impact of licensed operation on the water environment and determination of an environmentally acceptable licence.	NRA/ TWUL	50-100					
Review available groundwater level and river flow and environmental data to assess impact of long term abstractions	NRA/ TWUL	10-50					
Field investigation and pumping trials	NRA/ TWUL	10-50					
Develop groundwater model of Oolite aquifers to model alternative patterns of groundwater abstractions.	NRA	50-100					
Investigate further groundwater modelling of abstractions (see River Levels and flows).	NRA/ TWUL	50-100					
Undertake investigations and report on environmental impact of licence proposals	NRA/TWUL	N/A					

Issue 3: Water Quality Protection and Enhancement

The NRA needs to focus on the need to maintain the generally excellent water quality in the catchment. Several reaches require capital investment at Sewage Treatment Works (STW) to allow the quality to achieve its River Quality Objective RQOs.

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Several reaches also need further research on their quality before the RQOs can be confirmed.

Activity	Resp.	Cost (£K)	1995	1996	1997	1998	1999
Improvement to the following Sewage Treatment Works (Under UWWTD by December 2005):- Wanborough, Wroughton (including storm tanks and flow to full treatment), Cricklade (including storm tanks), Fairford, Highworth, Kempsford, Lechlade (including storm tanks), Purton, Shrivenham (to protect Tuckmill Brook and River Cole), Blunsdon (to protect Share Ditch), Ashton Keynes (to protect Thames), Ampney St. Peter (to protect Ampney Brook and the Thames)	NRA/TW UL	> 100					

Issue 4: Flooding

The towns affected by localised flooding problems include Ashton Keynes, Somerford Keynes and South Cerney.

There is a need to improve available information on floodplains and to consider suitable watercourse maintenance regimes.

Activity	Resp.	Cost (£K)	1995	1996	1997	1998	1999
Local Flooding (Somerford Keynes) Advise/encourage action on drainage problems and river bank problems	NRA	100					
Local Flooding (South Cerney) Advise/encourage action on drainage problems and river bank problems	NRA	10					
Section 105 land and river bed surveys. From Roundhouse to Buscot Lock. The Upper Thames area is a pilot study and work is in hand. Full survey programme to be defined.	NRA	> 100					

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Issue 5: Fisheries

The quality of fisheries in the Rivers Churn, Cole, Ray, Thames and the Ampney Brook are not as good as would be expected despite the ecosystems appearing capable of supporting a good quality fishery. The reasons behind this are uncertain but are probably a combination of low flows, habitat degradation and poor water quality. Fisheries need to be continually monitored, problems investigated and enhanced as necessary.

Activity	Resp.	Cost (£K)	1995	1996	1997	1998	1999
Upper Thames Fishery Survey	NRA	10-50					
Wilts Ray Fishery Survey	NRA	10-50					
River Churn Fishery Survey	NRA	10-50					
River Cole Fishery Survey	NRA	10-50					
Ampney Brook Fishery Survey	NRA	10-50					
Fisheries monitoring in relation to the Rivers Restoration Project on the Cole	NRA	10-50					
River Leach habitat enhancement monitoring Habitat enhancement to be completed 95/96	NRA	10-50					

Issue 6: Cotswold Water Park

The Cotswold Water park is a nationally important water feature, especially in terms of wildlife. From a catchment perspective, the Park is important in terms of the fishery, flood hazard management, recreation and conservation. The significance of the Park especially in terms of hydrogeology is not fully understood. There is also a need for all the interested parties to plan future developments at the park sensitively. (See Appendix 3 on the Cotswold Water Park)

Activity	Resp	Cost (£K)	1995	1996	1997	1998	1999
Effects of Mineral Extraction on the hydrogeology of the area to be monitored. This will partly be achieved by Section 105 surveys but may require additional monitoring equipment to be installed	LPA NRA	50-100					

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Gather gravel groundwater level data from gravel companies. Install and monitor additional wells, east of A419 as necessary. Requires cooperation of gravel companies, long term exercise	NRA EN Gravel Companies	50-100					
The production of a detailed management plan for the Cotswold Water Park area. To include findings from landscape and hydrological study	NRA	10-50					
Completion of Landscape Assessment of Upper River Thames - important in forming Upper Thames Minerals Policies. (see appendix 4)	NRA	< 10					

Issue 7: Recreation and Canal Restoration

The re-opening of canals represents the development of a valuable recreational resource but has a number of multifunctional implications. Canals require appreciable quantities of water to support navigation and run successfully. There are already significant water resource constraints in the catchment and the re-opening of the canals may intensify water resource problems.

Activity	Resp.	Cost (£K)	1995	1996	1997	1998	1999
The canal restoration project will be an important recreational asset and the principle is supported by the NRA Recreation and Navigation functions.	NRA, CCT, WBCT, BW, LPA's	N/A					
Establish feasibility of availability of water resources to supply canals Severn-Thames and Wilts-Berks	NRA, CCT, WBCT, BW, LPA's	> 100					

Issue 8: Future Water Resources: Meeting Future Demands for Water

Meeting future needs for water will require a combination of methods to manage growth in demand. For example, through further leakage control, possibly domestic metering and generally raising awareness of more efficient use of water at work and in the home.

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If these management practices do not fully balance longer term growth in water demand, new strategic schemes may need to be promoted. A number of potential schemes have been identified, including a new reservoir in south-west Oxfordshire, possible inter-basin transfers between the Severn and the Thames and increasing the re-use of water.

Activity	Resp.	Cost (£K)	1995	1996	1997	1998	1999
Development of infrastructure to secure adequate resources to meet growth in demand and changes to licensed abstractions	TWUL	N/A					
Publication of NRA Water Conservation Strategy	NRA	10-50					
Promoting National and Regional policies and initiatives	NRA	N/A					
Secure practical and economic levels of leakage losses	NRA	N/A					
NRA Planning guidance to LPAs to ensure sustainable development planning	NRA/ LPA	N/A					
Influencing new and re-development to incorporate water efficient technology	NRA	N/A					
Investigations of feasibility of future water resource schemes including:- Severn- Thames Transfer South West Oxfordshire Reservoir	NRA LPA	N/A					

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Issue 9: Integrated Management

As a key part of the move towards sustainability a more integrated approach to natural resource management is required. Developing integrated management approaches represents a substantial challenge to all those who live in and use a catchment. The concept of integration requires specialists to broaden their perspective and appreciate the impact of specific activities on the entire catchment and over different periods of time.

Activity	Resp.	Cost (£K)	1995	1996	1997	1998	1999
Work in concert with Great Western Community Forest to identify the significant potential for river and floodplain restoration in the Swindon Ray and Cole catchments	Community Forest Team and Steering Groups, NRA	N/A					

Issue 10: Communication

The actions of a range of individuals and user groups impact on the catchment and affect different uses. All groups need to communicate effectively to ensure that development at the catchment scale is sustainable and that the ability of the ecosystem to support different uses is sustained. There is also a need to make communication at "grass roots" level with the public as effective as possible. CMPs are indeed hoped to be one way of improving communication among the catchment's interested organisations.

A possible approach to encourage communication between the different "players" in the catchment is for the NRA to facilitate a working group. This group could comprise representatives from the statutory agencies and leading interest groups.

Activity	Resp.	Cost (£K)	1995	1996	1997	1998	1999
Establishment of a working group to facilitate the implementation of the Upper Thames Catchment Management Plan	NRA	< 10					
The production of Annual Plan Reviews and newsletters to monitor the progress of the Action Plan	NRA	< 10					

5.3 General Activities

This section of the Action Plan describes those activities which have not been prompted by the issues raised during the consultation period but are nonetheless considered to be important in order to safeguard and improve the water environment. The NRA will take full account of the relative importance of these activities to the issue-related activities when deciding annually how to allocate available resources. The "general activities" have been grouped under four main headings.

Table 1 MONITORING (*describe resource*)

Includes: Sampling/survey programmes and any other data collection action, modelling, analysis of data, compiling inventories.

Table 2 REGULATION & ENFORCEMENT (*safeguard resource*)

Includes: Issuing of licences such as abstraction licences and fishing permits and indirect regulation such as responding to planning applications.

Table 3 OPERATIONS (*maintain resource*)

Includes: Emergencies, promotion and advisory services

Table 4 IMPROVEMENTS (*enhance resource*)

Includes: Enhancement schemes and improvement of degraded areas

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Monitoring Report - Table 1

	ACTIVITY	RESPONSIBILITY	1995/96	1996/97	1997/98	1998/99	FUTURE	COST (£K)	COMMENT
M1	Review of current facilities for boaters. This information needs to be shown on a geographic database	NRA						< 10	
M2	Planning programme of groundwater and surface water level monitoring sites	NRA						10-50	Monitoring sites are being identified.
M3	Undertake monitoring and examination of flood records, flow routes, landowners survey etc	NRA, CDC, North Wilts DC, Thamesdown BC							Collation of data is needed prior to appraisals
M4	Survey including: Photogrammetry, channel survey	NRA							
M5	Hydraulic modelling and hydrological modelling	NRA							
M6	Assessment of groundwater data	NRA, GCC							Linked with WLMPs and joint project with English Nature and NRA Conservation.

Monitoring Report -
Table 1

	ACTIVITY	RESPONSIBILITY	1995/96	1996/97	1997/98	1998/99	FUTURE	COST (£K)	COMMENT
M7	Assessment of compliance of river quality with objectives	NRA, Thamesdown BC						N/A	Continuous
M8	Assessment of compliance of discharges with consent standards	NRA						N/A	Continuous
M9	Assessment of changes of chemical quality grades of rivers	NRA						N/A	Annual
M10	WQ Modelling of rivers and discharges where necessary	NRA						N/A	Continuous
M11	Measurement of rainfall, groundwater levels, river levels and flow.	NRA						N/A	On-going
M12	Telemetred rain gauge proposed around Coln St Dennis	NRA						<10	<why?>
M13	Additional daily gauges may be required (meeting 6/7 to discuss)	NRA						<10	Number and location of additional monitoring equipment to be finalised.
M14	Feasibility study for new ultrasonic flow site at Buscot (Thames).	NRA						<10	<WHY?>
M15	Build Buscot ultrasonic	NRA						>100	

Monitoring Report - Table 1

	ACTIVITY	RESPONSIBILITY	1995/96	1996/97	1997/98	1998/99	FUTURE	COST (£K)	COMMENT
M16	Respond effectively to individual planning applications and development proposals in the Upper Thames Catchment	NRA						N/A	To ensure that NRA's aims to protect and improve the water environment are achieved
M17	Promotion of Guidance Notes for LPAs for incorporation into statutory plans	NRA, GCC, WCC, CDC, NNDC						N/A	To ensure adequate environmental safeguards are written into plans to facilitate development control
M18	Co-ordinate analysis of EN borehole monitoring data to assess trends in relation to riparian meadow SSSIs in CMP area - identify future monitoring needs	NRA, EN						N/A	
M19	Use existing NRA River Corridor Survey data (LA and other data) to assess co-operative status of sub-catchments within CMP area - to inform prioritisation of habitat enhancement and protection measures	NRA						N/A	

Monitoring Report-Table 1

	ACTIVITY	RESPONSIBILITY	1995/96	1996/97	1997/98	1998/99	FUTURE	COST (£K)	COMMENT
M20	Preliminary examination of toxic residues in fish tissue from identified sites in the CMP area	NRA with Oxford University Wildlife and Conservation Research Unit, as part of Water Vole/Mink Riparian Study						Project costs from A Driver	Joint research project with Oxford University's Wilderu with numerous potential spinoffs in ecological knowledge of key species and habitats
M21	Monitor recovery of otter population to Upper Thames	NRA, BBONT						N/A	
M22	Water Quality sampling (manual and automatic)	NRA						N/A	Ongoing statutory duty done in line with national policy
M23	Biological sampling	NRA						N/A	
M24	Groundwater sampling network	NRA						N/A	

	ACTIVITY	RESPONSIBILITY	1995/96	1996/97	1997/98	1998/99	FUTURE	COST (£K)	COMMENT
R1	Enforcement of Land Drainage Byelaws.	NRA						N/A	Landowner awareness of Byelaws and provision of Water Resources Acts. Policy and training also required internally.
R2	Ensuring that Navigation regulations are enforced ie. collecting registration fees and enforcing Navigation Byelaws.	NRA						N/A	New Navigation Byelaws were introduced in 1995. These are being introduced on the Thames by a process of education, rather than prosecution.
R3	Enforcement of Salmon and Freshwater Fisheries Act 1975 and Fisheries Byelaws including issuing of consents and licence checking	NRA						N/A	Ongoing activities
R4	Input to town planning process a) external b) internal (water abstraction, effluent discharge, flood defence)	NRA/LPA's						N/A	Routine ongoing activity
R5	Licensing of abstractions to protect the water environment	NRA, applicants						N/A	ongoing
R6	Abstraction licence enforcement to ensure compliance with licence conditions	NRA, abstractors						N/A	ongoing

	ACTIVITY	RESPONSIBILITY	1995/96	1996/97	1997/98	1998/99	FUTURE	COST (£K)	COMMENT
R7	Determine River Flow Objectives prescribed flows	NRA						N/A	long term plan
R8	Development of classification scheme < what is the significance of this?, more info please	NRA						N/A	Further development depends on national R&D and policy
R9	Ensure NRA's input to new mineral planning applications in the Catchment area protects the existing ecological resource and promotes restoration to wetland habitats to provide habitat mosaics which will increase the biodiversity of the Catchment.	NRA, LAs, EN						N/A	
R10	Continue and improve input to planning consultation procedures in order to meet aims of conserving the present ecological resource of the water environment and pursue opportunities for habitat enhancement through the planning process	NRA						N/A	
R11	Continue input to NRA regulatory activities in (i) water abstractions - to ensure protection of river flows and water dependent habitats. (ii) land drainage consents, to protect river and riparian habitats and promote sensitive engineering methods, and (iii) develop consents to identify threats and protect waters and water-dependent habitats from deleterious effects resulting from discharges	NRA						N/A	
R12	Ensure NRA regulatory activities meet EN's Site Management Guidelines and advice re Cotswold Water Park	NRA						N/A	

	ACTIVITY	RESPONSIBILITY	1995/96	1996/97	1997/98	1998/99	FUTURE	COST (£K)	COMMENT
R13	Regulation of crayfish farming to protect native crayfish populations	NRA						N/A	
R14	Respond to Waste Management Licences	CC NRA						N/A	Ongoing activity

	ACTIVITY	RESPONSIBILITY	1995/96	1996/97	1997/98	1998/99	FUTURE	COST (£K)	COMMENT
O1	General river maintenance.	NRA						>100	JD: <What is planned for U Thames? How many km? Site specific info?> Routine; for maintaining Standard of Service.
O2	Emergency fisheries response capability including aeration and fish rescues	NRA						N/A	On going activities
O3	Emergency Flood Responses.							50-100	Patrolling during floods. Assistance to Local Authorities etc.
O4	Flood warning.	NRA						N/A	To provide a service - issuing warnings.
O5	River Control Structures Survey	NRA						10-50	Identify ownership, condition, levels etc. Valuable input into Section 105 Surveys, WLMP and SOS.
O6	Standards of Services/FDMS.	NRA						10-50	Objective is maintenance and valuable input into Section 105 Surveys, WLMP. (NB depends on use of Section 105 data for best value for money).

	ACTIVITY	RESPONSIBILITY	1995/96	1996/97	1997/98	1998/99	FUTURE	COST (£K)	COMMENT
O7	Planned 'preventative' maintenance on weir structures downstream of the Roundhouse and above St. John's Lock.	NRA						10-50	Awaiting quotations from IBU under the new contract.
O8	Removal of shoals in weir streams, Flood Defence reaches, navigation.	NRA						10-50	Flexible programme dependent on weather and rainfall.
O9	Deformation survey stations on Locks and Weirs.	NRA						<10	
O10	Maintaining and managing Navigation Fairway on River Thames: Cricklade - Buscot.	NRA						N/A	Part of ongoing activity and includes the operation, 7 days a week, of St John's and Buscot locks.
O11	Maintenance where appropriate of NRA navigation and recreation assets, eg lock sites, moorings, gates and bridges.	NRA - where owned otherwise LA's and private owners.						N/A	Part of ongoing activity, primarily on the Thames navigation, and along the Thames Path. <site specifics? No. kms, etc>
O12	Promoting the use of the Thames and other recreational waterways and associated land for safe recreation.	NRA, working with LA's and landowners.						N/A	Part of NRA general duty, offering information and advice to the public at lock sites via Info boards (St John's Lock) and NRA lock staff.
O13	Maintaining contact with anglers eg. Upper Thames Fisheries Consultative (UTFC) Newscast magazine PR	NRA/UTFC						N/A	Routine ongoing activity

	ACTIVITY	RESPONSIBILITY	1995/96	1996/97	1997/98	1998/99	FUTURE	COST (£K)	COMMENT
O14	Provision of advisory services, including fisheries management advice and assistance. (NB all of the above apply to rivers and still waters)	NRA						N/A	Routine ongoing activity
O15	Continue input to river maintenance activities to ensure compliance with conservation guidelines for good practice, improving input to trimming and weedcutting practices. Ensure progression of SOS methodology reflects changes in land-use to greater extensification and reflects need to protect ecological resources including floodplain habitats dependent on flooding.	NRA - in consultation with EN, other environmental organisations, Flood Defence and other internal NRA functions						N/A	
O16	Continue to provide advice on all wetland issues/river management etc to internal and external customers	NRA						N/A	
O17	Produce WLMPs for 9 agreed sites in CMP area, including N Meadow NNR, and implement completed plans N Meadow NNR CWP Clattinger Farm, Upper Waterhay Meadow, Pike Corner, Windon Meadow Coate Water Whelford Meadow Wildmoorway Meadow	NRA in conjunction with EN and riparian landowners						From A Driver. Part of regional contract	Interim plans to be produced for all site 95/96, full plan for North Meadow only in 95/96

	ACTIVITY	RESPONSIBILITY	1995/96	1996/97	1997/98	1998/99	FUTURE	COST (£K)	COMMENT
O18	Promote schemes/collaborative projects which serve to provide agricultural extensification in flood plains, buffer zones to rivers, habitat enhancement and restoration, etc. - eg Countryside Stewardship	NRA, CoCo,MAFF,EN, etc.						N/A	
O19	Response to pollution incidents and emergencies to published response times	NRA						N/A	Ongoing statutory requirement
O20	Pollution prevention activity including focused action at industrial sites and farms	NRA						N/A	Ongoing rolling programme need to undertake repeated visits to maintain progress
O21	Implementation of the national 'Policy and Practice for the Protection of groundwater'	NRA						N/A	Ongoing

	ACTIVITY	RESPONSIBILITY	1995/96	1996/97	1997/98	1998/99	FUTURE	COST (£K)	COMMENT
I1	Provision of facilities for boaters in appropriate areas							10-50	
I2	New head layby at St John's lock.							50-100	
I3	New 24 hour mooring in wharf in Lechlade.							10-50	
I4	Review of what is currently available for boaters and where, and store this information on a geographic Recreation database.							N/A	
I5	Carry out a review of access and signage to and along the Thames Path	Countryside Commission						N/A	The Thames Path will be officially launched in 1996 and signage should be installed by then
I6	Support and facilitate if possible the construction of a bridge as part of the Thames Path close to St John's Bridge.	Countryside Commission						N/A	The proposed Bloomers Hole Bridge is currently the subject of a planning date.
I7	Support the development of Thames Head which marks the source of Thames.	Countryside Commission (as part of Thames Path)						N/A	Access around the source needs to be resolved, with a more significant marker at the site.
I8	Review the availability of leaflets on the Thames and establish what is required.	NRA, LPA, County Council						N/A	The Recreation Information Strategy which is currently being implemented covers this area of work.

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IMPROVEMENTS - TABLE 4

	ACTIVITY	RESPONSIBILITY	1995/96	1996/97	1997/98	1998/99	FUTURE	COST (£K)	COMMENT
I9	Review access and facilities for canoeists.	NRA/BCU						N/A	This is part of the NRA's ongoing Canoe Strategy.
I10	Review lock and weir fishing.	NRA						N/A	Part of an ongoing review of anything at lock and weir sites.
I11	Great Western Community Forest NRA Recreation involved in advising the project on water recreation issues.	Community Forest Team NRA (Recreation)						N/A	The Great Western Community Forest will be adjacent to the Upper Thames and should provide access and amenities along the River.
I12	Facilitate implementation of the River Cole Restoration Project ensuring its potential for recreation and conservation is fully realised.	NRA/RRP/NRA/NT etc.						N/A	The Cole RRS project will begin in 19 . Potential for improving recreational access will be investigated.
I13	The Liden Lagoon as a flood storage area to be maintained and managed by Thamesdown BC. Other similar projects to be established where possible.	NRA (Recreation) Thamesdown BC						N/A	Liden Lagoon is a flood storage area owned by the NRA and leased to Thamesdown for recreational use. There may be scope for similar projects.

	ACTIVITY	RESPONSIBILITY	1995/96	1996/97	1997/98	1998/99	FUTURE	COST (£K)	COMMENT
I14	Identify most important/threatened habitats and species within CMP area and develop strategies for protection and restoration in conjunction with other bodies - identify targets and facilitate actions. Key into developing county biodiversity initiatives	NRA RSPB, County Wildlife Trusts, etc						N/A	
I15	Carry out programme of habitat enhancements funded by Flood Defence Enhancement Budget to restore degraded rivers and riparian habitats eg R Cole - Wetland restoration with Great Western Community Forest	NRA Landowners/other environmental organisations Thamesdown BC						10-50	
I16	Carry out programme of habitat enhancements as identified by Upper Thames Otter Habitat Project - identify further enhancements particularly on R Churn catchment	NRA Landowners						<10	
I17	Identify remaining strongholds of water vole in CMP area and carry out measures to improve habitat as and when research information provides guidelines	NRA Oxford University 'Wildern'						<10	
I18	Special water quality investigation on the River Ray. On completion, target specific industrial sites	NRA						N/A	Highest priority for investigation in this catchment
I19	Project to investigate the impact of rural sewerage in the Upper Thames	NRA						N/A	Being undertaken by student. Final report awaited.
I20	Follow up the recommendations set out in the River Coln and Leach Landscape Assessment Report completed in April 1995	NRA, landowners, Local Authorities						N/A	

6.0 FUTURE REVIEW AND MONITORING

6.1 The NRA will be jointly responsible, with other organisations and individuals, for implementing the actions identified in this Action Plan. Progress will be monitored on a regular basis and reported annually in a review document. The annual review will:

- detail the progress achieved compared with the work planned;
- identify additional actions required in the light of changes in the catchment;
- consider the need to update the Catchment Management Plan.

The overall CMP process will usually be repeated every five years.

7.0 THE ENVIRONMENT AGENCY

- 7.1 The Environment Act will bring together the NRA, Her Majesty's Inspectorate of Pollution and the local Waste Regulation Authorities into one single Environment Agency in April 1996. Royal assent for the Act was granted on 19 July, and it will shortly become a legal entity. The DoE has now announced the appointments to the Board of the new Environment Agency and these include several members who have strong links with the NRA. The creation of an Agency with a remit to protect and enhance the environment as part of the quest for sustainable development is of vital importance as we move towards a new century.
- 7.2 It is expected that CMPs will continue to be undertaken but enhanced to cover the responsibilities of the other organisations within the new Agency. The Annual Review of the Upper Thames CMP is planned to be published by the NRA as an integral part of the new Agency in November 1996.

Thank you for your interest in the Upper Thames catchment.

Please note: This is not a legally or scientifically binding document since it is written for both wide public appreciation and information

APPENDIX 1

WATER QUALITY OBJECTIVES

One of the main aims of the NRA is to maintain or improve the quality of rivers by controlling water pollution. The Water Resources Act (1991) allows the Government to set Statutory Water Quality Objectives (SWQOs). These will replace the non-statutory River Quality Objectives (RQOs) set in the 1970s. The objectives set will be related to the use of the water. Five such uses have been proposed. Detailed regulations have been published for one, the "Rivers Ecosystem" use, based on the suitability to support fish populations. The River Ecosystem classes can be summarised as follows:

RE1: Water of very good quality suitable for all fish species;

RE2: Water of good quality suitable for all fish species;

RE3: Water of fair quality suitable for high class coarse fish populations;

RE4: Water of fair quality suitable for coarse fish populations;

RE5: Water of poor quality likely to limit coarse fish populations.

Below is a table which shows the RE classes for all the watercourses in the Upper Thames Catchment.

RIVER QUALITY OBJECTIVES – UPPER THAMES CATCHMENT

WATERCOURSE	REACH	LENGTH km	RQO RE
COLE	Tuckmill Brook – Thames	14.5	RE3(1994)
COLE	Walcot – Tuckmill Brook	13.1	RE3(1994)
COLN	Source – Compton Abdale Stream	16.8	RE2(1994)
COLN	Compton Abdale Stream – Bibury Fish Farm	15.6	RE2(1994)
COLN	Dudgrove Stream – Thames	1.0	RE2(1994)
DERRY BROOK	Source – Swill Brook	6.7	RE5(1994)
DUDGROVE STREAM	Source – Coln	7.2	RE2(1994)
HAYDON WICK BROOK	Haydon Wick – Ray	2.8	RE3(1994)
LENTA BROOK	Bishopstone – Cole	6.5	RE2(1994)
LENTA BROOK EAST	Lenta Brook – Cole (E)	2.5	RE5(1994)
LERTWELL BROOK	Ashbury – Tuckmill Brook	2.1	RE5(1994)
LIDEN BROOK	Liddington – Cole	8.2	RE3(1994)
LYDIARD BROOK	Source – Rodbourne Tip	3.7	RE3(1994)
RAY	Haydon Wick Brook – Thames	7.8	RE4(1994)
SWILL BROOK	Flagham Brook – Thames	3.6	RE2(1994)
SWILL BROOK	West Crudwell – Flagham Brook	10.0	RE3(1994)
THAMES	Source – Swill Brook	11.2	RE3(1994)
TUCKMILL BROOK	Idstone – Shrivenham STW	7.1	RE3(1994)
VENEYMORE DITCH	Leach – Leach	2.7	RE2(1994)
WESTROP BROOK	Source – Bydemill Brook	3.2	RE5(1994)
WROUGHTON DITCH	Wroughton STW – Ray	0.9	RE5(1994)
LYDIARD BROOK	Rodbourn Tip – Ray	0.7	RE4(1994)
RAY	Source – Wroughton Ditch	4.5	RE2(1994)
RAY	Swindon STW – Haydon Wick Brook	4.2	RE4(1994)
SOUTH MARSTON BROOK	Source – Cole	5.2	RE2(1994)
AMPNEY BROOK	Source – Poulton Stream	9.3	RE1(1994)
AMPNEY BROOK	Poulton Stream – Thames	3.3	RE1(1994)
BLUNSDON BROOK	Broad Blunsdon – Thames	5.1	RE4(1994)
BYDEMILL BROOK	Source – Thames	10.5	RE4(1994)
CERNEY WICK BROOK	South Cerney – Thames	5.5	RE4(1994)
CHURN	Siddington Mill – Thames	12.2	RE1(1994)
CHURN	Seven Springs – Siddington Mill	25.1	RE1(1994)
COLN	Bibury Fish Farm – Bibury STW	1.3	RE2(1994)
COLN	Fairford Mill – Dudgrove Stream	7.8	RE1(1994)
COLN	Bibury STW – Fairford Mill	9.2	RE2(1994)
KEY	Source – Thames	10.7	RE4(1994)
LEACH	Little Faringdon FFM – Thames	3.4	RE1(2006)
LEACH	North Leach – Little Faringdon FFM	27.1	RE1(1994)
MARSTON MEYSEY BROOK	Source – Thames	7.3	RE2(1994)
RAY	Wroughton Ditch – Swindon STW	4.5	RE4(1994)
SHARE DITCH	Source – Thames	6.1	RE4(1994)
THAMES	Share Ditch – Bydemill Brook	3.8	RE3(1994)
THAMES	Cerney Wick Brook – Key	4.0	RE2(1994)
THAMES	Swill Brook – Cerney Wick Brook	3.5	RE2(1994)
THAMES	Bydemill Brook – Coln	2.9	RE3(1994)
THAMES	Key – Ray	1.4	RE2(1994)
THAMES	Ray – Share Ditch	7.3	RE3(1994)
TUCKMILL BROOK	Shrivenham STW – Cole	2.6	RE4(1994)
WATERLOO DITCH	Source – Cole	4.2	RE2(1994)

APPENDIX 2

1.0 COTSWOLD WATER PARK

- 1.1 The Cotswold Water Park was identified as a pressure point in "Thames 21" because of the variety of developments focused on this environmentally sensitive area. Minerals extraction in particular is focused on the CWP, however, it must be realised that the Park would not exist without its history of mineral workings. In addition the Park has great potential for recreational and tourism development including significant built development such as holiday village complexes.
- 1.2 The main concern of the NRA is to balance the demand for further development with the protection of the water environment. Additional mineral extraction for example could make a significant impact on the landscape of the river corridor unless guidelines are followed and suitable after uses agreed before extraction takes place. Further recreation and tourism development is also likely to impact on the water environment including surface water run-off from built development and disturbance to wildlife by noisy sports. The NRA must therefore work closely with local authorities to ensure that the correct balance is struck which will minimise the impact on the water environment within the catchment.
- 1.3 Many of the responses to the NRA's Upper Thames Consultation Report of January 1995 raised concerns relating to the Cotswold Water Park, particularly the Land Use Strategy known as the Upper Thames Land Use Initiative. The intention of this strategy was that it should be a vision for the Cotswold Water Park which would ensure that any future development would be environmentally sustainable and take account of the sensitivity of the area. It was based on a site by site analysis of the areas of search for minerals.
- 1.4 It was recognised in the Consultation Report that the document was an overview only and as such could not be recognised as a practical planning tool. It was therefore suggested that the existing Strategy should be refined and made more specific to water environment issues. It is likely that the refined strategy will not necessarily follow a zoning map as before but will be based on specific policies which fall directly within the NRA's remit. To refine and build upon the findings of the original report two further investigations have been initiated, a landscape assessment which is discussed in Appendix 4 and a hydrological study.
- 1.5 **Hydrological Study:** A detailed hydrological study has been initiated by the NRA. The first priority for the study is the Latton, Down Ampney, Marston Meysey area where there is little information on groundwater contours and the interest in mineral extraction is high. When sites of existing groundwater monitoring have been plotted, further new sites will be identified and options for providing them determined. The movement of groundwater in the western part of the Cotswold Water Park is likely to be complex, consequently those parts east of the A419 are initially being targeted.

UPPER THAMES CATCHMENT MANAGEMENT PLAN - ACTION PLAN 1995

It is envisaged that future mineral operators will be given better guidance using this information and will carry out monitoring themselves as part of a co-ordinated scheme.

APPENDIX 3

1.0 LANDSCAPE ASSESSMENT OF THE UPPER THAMES CATCHMENT

- 1.1 Landscape consultants were commissioned by the NRA in March 1995 to carry out a strategic landscape assessment of the Upper Thames Catchment Area which has recently been completed. The principal purpose of the study was to report to the CMP on the broad landscape assessment of the river corridors; and appraise the principal landscape issues affecting the catchment. Full details of the assessment study are now available for view at the West Area Office while the main findings of the study are summarised below.
- 1.2 The strategic assessment was based on the NRA's publication "River Landscape Assessment - Methods and Procedures", Conservation Technical Handbook No. 2, April 1993. The publication describes a systematic approach for the assessment of river landscapes at both catchment level and individual river corridor scale.
- 1.3 The landscape characteristics of an area results from the interaction of physical influences, in particular the topographical structure arising from the underlying geology, and the overlay of human influences which affect land cover elements and land use.
- 1.4 The Upper Thames has a strong physical structure within which a number of distinct Regional Character Areas may be identified. The divisions have principally been established in response to topography and the underlying geology. There are, however, variations in the pattern of land use and land cover between areas, in response to differing physical characteristics. This further emphasises the identity of each Character Area.
- 1.5 The Regional Character Areas are summarised on Fig.2. Within certain Character Areas, land form variations have created a second tier of classification into Sub-regional Character Areas as set out below.

Regional Character Area	Sub-regional Character Area
Cotswold High Wold	High wold plateau
	High wold valley
Cotswold Dip Slope	Dip slope plateau
	Dip slope valley
Cotswold Dip Slope Lowland	
Upper Thames Basin	Thames Basin floodplain/wetland
	Thames Basin clay lowland
Corallian Limestone Ridge	Corallian hills

	Corallian undulating lowland
Vale of White Horse Lowland	
North Wessex Downs Escarpment	

- 1.6 From the Strategic Landscape Assessment a number of key landscape issues have been identified which have been set out in the main report. Many of these are 'catchment scale' and therefore relevant to any or all of the river corridors. Others, however, are site or regionally specific issues and arise from a particular set of landscape problems or opportunities. From these identified issues recommended actions have been suggested as follows:-

Catchment Scale Areas for Action

- a) Encourage reversion of areas of arable land back to permanent pasture and meadows, particularly within:
 - i) The High Wold Valleys where intensive arable production is encroaching onto the valley heads
 - ii) The Thames floodplain where areas of intensive arable production are inconsistent with the pastoral character of the area
- b) Encourage establishment of continuous or intermittent belts of planting to consolidate "green" wildlife corridors within river valleys.
- c) Encourage restoration of improved or straightened sections of rivers, particularly within rural areas, in conjunction with hydrological and habitat assessment and management to reinstate earlier natural river alignment and diverse bank-side vegetation, wetland and wildlife habitats. Exemplified by pioneer "demonstration" project of River Restoration Project at Coleshill.
- d) Encourage limited but sensitively designed facilities for tourists at key locations only within river valleys, to ensure majority of river corridor section remain unaffected by tourism and public facilities and landscape character is not adversely affected. Avoid encroachment of facilities onto vulnerable river margins.
- e) Encourage management of existing and establishment of new planting to river edges and within valley systems generally, where appropriate to the landscape character to consolidate existing structure.
- f) Encourage establishment of a comprehensive riverside footpath network throughout the catchment consolidating the existing gaps within the river edge path network.

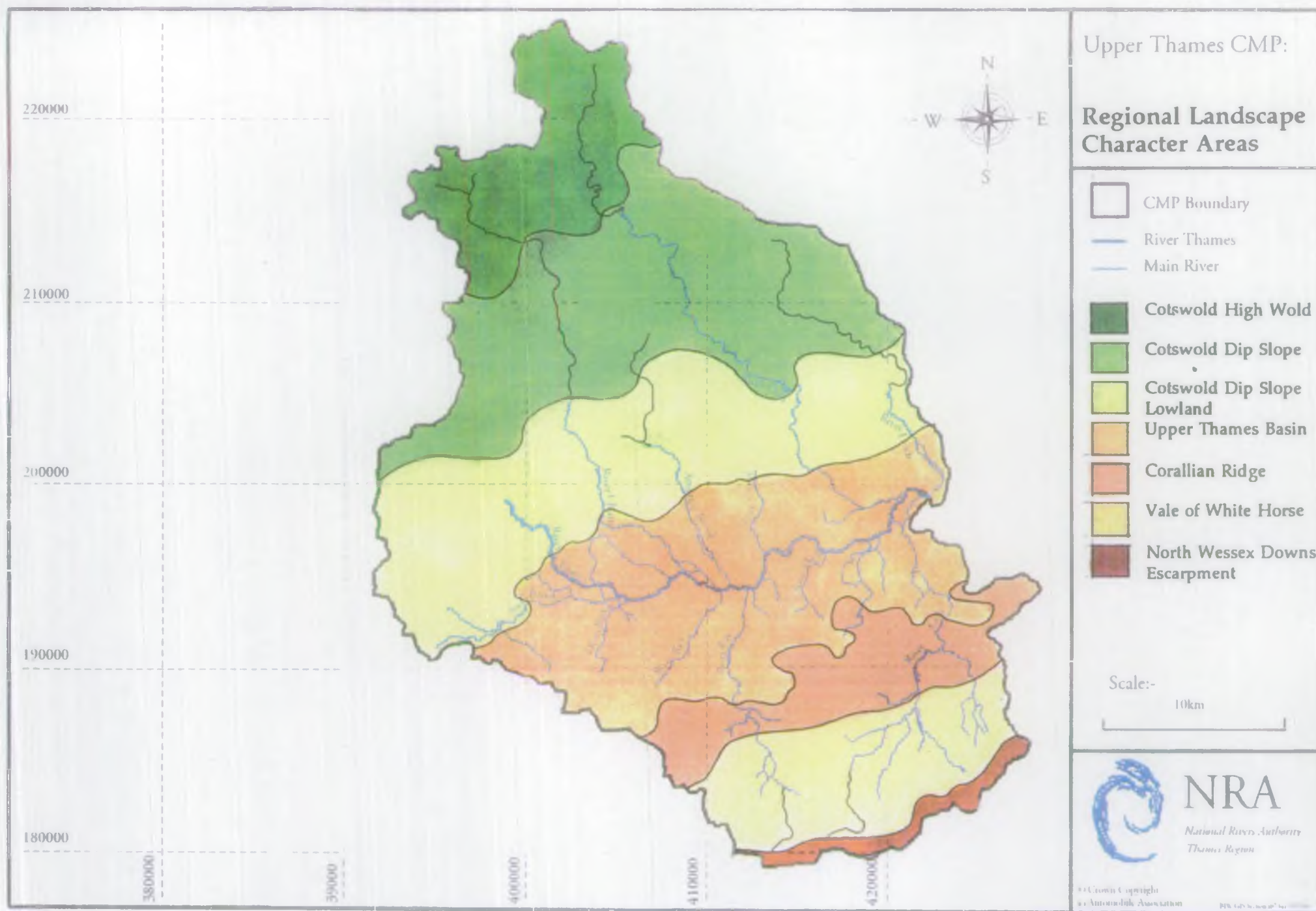


Figure 2

Site or Regionally Specific Areas for Action

- a) The NRA should undertake a detailed landscape assessment of the Cotswold Water Park area, including those areas where there are economic reserves with potential for future gravel extraction. The strategic landscape assessment would enable the capacity and vulnerability of the landscape to further change to be determined.
- b) Advantage should be taken of the initiatives and framework for landscape restoration and enhancement presented by the Great Western Community Forest Community Project as there will be opportunities within the river corridor sections of the Project Area to implement planting and management schemes.
- c) Encouragement should be given to restore or enhance degraded sections of the Rivers Ray and Cole where these extend into Swindon.
- d) Further mismanagement and "over cultivation" of private land extending down to river edges within the Cotswolds villages should be discouraged

- 1.7 Of particular significance is the recommended action for a further detailed landscape assessment of the Cotswold Water Park area, including those areas where there are existing economic reserves with potential for future gravel extraction. This study has been planned to be carried out over summer 1995. Many of the other suggested actions have already been addressed in the activity plans. The remainder will be investigated to see if they can be dealt with under the NRA's remit or whether they could be more appropriately dealt with by other organisations.

APPENDIX 4

CONSERVATION AND OPPORTUNITIES FOR ENHANCEMENT

Opportunities for enhancement

- 1.1 The Upper Thames CMP area comprises a considerable variety of river types, with the northern (Cotswold) tributaries generally of a higher biological diversity, partly due to the limestone influence, than the southern tributaries, heavily influenced by their flashy clay catchments but also having generally suffered more from land drainage improvement schemes involving heavy engineering of river channels (such as the River Ray and River Cole). All rivers and flood plain habitats have suffered varying degrees of habitat degradation and, as in the rest of lowland Britain, a significant percentage of the wetland resource has been lost.
- 1.2 The CMP area contains 26 SSSIs, including North Meadow National Nature Reserve which is of international significance for its herb-rich flora and contains by far the greatest concentration of Snakes Head Fritillaries in the country, and Cotswold Water Park SSSI, a series of ten lakes within the Water park noted for their marl plant communities and associated invertebrates. There are numerous other sites of regional or local conservation importance within the CMP area.
- 1.3 English Nature (EN) has recently embarked on an initiative to guide its statutory conservation role, whereby it has identified and delineated a series of 'Natural Areas' throughout the Country. These are essentially distinct landscape types which have characteristic habitats, species and natural features and primarily determined by physical/geological features and modified by past and present land-use patterns. Parts of four of them fall within the CMP area:- The Greater Cotswolds, Oxford Clay Vales, Oxford Heights and Wessex Downs. EN has also identified Prime Biodiversity Areas with Natural Areas, these being discrete areas which contain a significant variety and/or concentration of sites and/or species of ecological value. Two fall within the CMP area, Braydon Forest and the Cotswold Water Park, and the NRA has a significant role to play, particularly in the case of the latter, to ensure that this ecological resource is conserved and enhanced.
- 1.4 A number of basic environmental objectives, consistent with the NRA's statutory conservation responsibilities, must underpin its approach to the ecological aspects of the water environment. These are:
 - i) Safeguard existing habitats and landscapes of high value, enhance degraded habitats and landscapes and seek to increase the resource of wetland habitats and species.

- ii) Promote the conservation of all native aquatic life and associated non-aquatic organisms in riparian habitats, protect the integrity and achieve a favourable conservation status of all habitats of conservation value.

1.5 There are a multitude of ways in which these objectives can be met, including:

- i) by ensuring that all operational activities are screened carefully for their environmental impact and that eg, river maintenance activities follow good practice guidelines to protect ecological resources;
- ii) by providing strong advice to local authorities through the planning process designed to ensure that development does not compromise the need to sustain and improve the ecological resources, both on a site by site and a wider policy basis;
- iii) by working in collaboration with other statutory and non-statutory organisations, landowners and farmers to develop policies, progress initiatives and identify opportunities which will conserve and enhance biodiversity within the CMP area.

1.6 A number of general and more specific issues are identified in the accompanying Activity Plans, and some of the more significant are briefly outlined below:

- As a means of identifying, conserving and enhancing the ecological resource, within the CMP Area, the NRA needs to work with other conservation bodies to identify key habitats and species related to the water environment in order to promote actions designed to achieve target levels of distribution and abundance. For many species and habitats this will not be a simple process, and the NRA needs to feed into existing County Biodiversity initiatives currently in progress.
- The NRA's programme of habitat enhancement work is driven largely by opportunity; an analysis of existing River Corridor Survey, Landscape Assessment and Fisheries surveys, and other available sources and direction coming from the Biodiversity Challenge initiatives, will better serve to identify priority areas for enhancement, where habitats are most degraded and/or where the diversity of habitats and species are greatest and where enhancements are therefore most likely to have significant benefits.
- The Upper Thames Otter Habitat Project fieldwork has been completed but there are now a considerable number of informally agreed habitat enhancements which the NRA now intends to carry out in co-operation with the relevant landowners. These enhancements are designed to provide refuge sites for otters in addition to those already identified by the Project Officers, often where there is little cover at present, in order to maximise the chances

of successful natural recolonisation by this species. At the moment there is known to be some otter activity in the CMP area and the intention is to see the status of the species consolidated in the Upper Thames in the next decade. Monitoring of its re-colonisation is vital.

- The Water Vole has an unfavourable conservation status in much of Britain now, and the NRA conservation section is co-funding a collaborative study with Oxford University's Wildlife Conservation Research Unit ('WildCRU') in order to investigate its ecological relationships with, mink, an alien species deemed to be a significant predator of the voles, and its general habitat requirements. This long-term study includes a variety of other investigative studies and should produce, among other things, advice on habitat management and restoration for water voles and identification of remaining strongholds.
- The collaborative project with Oxford University's WildCRU (See above) also aims to carry out some fish tissue analysis from selected areas of the Upper Thames, including sites within the CMP area. This should inform the NRA on levels of certain toxic pollutants (organochlorines, PCB's, heavy metals) within the catchment and should serve to help assessment of any potential threats to, eg, recolonisation by otters as well as other piscivorous predators and aquatic mammals in the catchment.
- The native crayfish is still present in parts of the CMP area. Like the otter, it is listed as a species in need of protection under the EC Habitats Directive and protected under schedule S of the Wildlife and Countryside Act 1981. It is imperative that its status and distribution within the Upper Thames is ascertained and measures taken to ensure its conservation and range expansion, including ensuring a policy of no-go areas for crayfish farms to minimise the threat of further losses from crayfish plague.
- The Cotswold Water Park is a significant ecological resource in its own right, containing nationally significant wintering populations of seven bird species and breeding population of one bird species. English Nature has recently produced site management guidelines to protect 60 of the most important lakes and it is imperative that the NRA's regulatory and operational activities are in sympathy with these guidelines.
- The NRA is currently embarking on an analysis of English Nature borehole data with reference to a number of important meadows SSSIs within the Upper Thames in the area of the Cotswold Water Park. This should serve to inform on any deleterious trends and on the need for any additional monitoring sites. Monitoring data for the Area of Search for mineral extraction within the wider Cotswold Water Park is needed to inform on the hydrological/ecological implications of extraction. At the same time, mineral extraction east of the

A419 provides exciting opportunities for wetland mosaics resulting from carefully designed restoration schemes and the NRA has a vital role to play in balancing the protection of the existing resource and the restoration of rare habitats and associated biotic diversity.

- The Great Western Community Forest provides significant opportunities for habitat restoration on the Rivers Ray and Cole and associated flood plains. There is a major challenge here for the NRA in looking at its river maintenance regimes and development control functions in relation to, eg the restoration of alluvial forest in the Ray catchment, and in responding to land-use extensification.
- The River Restoration Project on the River Cole at Coleshill provides an excellent opportunity to demonstrate river habitat restoration techniques and the NRA, in conjunction with the RRP, National Trust and other bodies, has a significant role to play in ensuring its success.
- A total of nine Water Level Management Plans are to be produced for the Upper Thames CMP area by the NRA in the next three years, all for water-dependent SSSIs. Eight of them only require interim plans by March 1996 but North Meadow NNR requires a full Management Plan. These need to be agreed by NRA, English Nature, relevant landowners and other interested parties and should serve to protect and if possible enhance the ecological integrity of the site while serving to balance these needs with those of agriculture and flood defence. The WLMP should address, where relevant, operation of control structures, trends in groundwater levels and effects of abstractions and discharges, routine river maintenance operations, and any other activities which impinge on the water environment of the site in question.

- 1.7 The delivery of the NRA's statutory conservation duties includes a considerable amount of action and liaison both internally, within the NRA, and externally with outside bodies and individuals. The challenge is to ensure that there is no net loss of the ecological resource within the water environment, and instead an improvement in the diversity and distribution of wetland habitats and species.

APPENDIX 5

ENVIRONMENTAL OBJECTIVES

Nature Conservation and Landscape

To protect and conserve highly valued river landscapes and habitats and enhance degraded river landscapes and habitats.

To safeguard and enhance the special ecological interest for which sites have been designated (eg SSSI).

To promote the conservation of all aquatic life and associated non-aquatic organisms in the river corridor, and to protect the integrity of all habitats of nature conservation value.

To carry out channel and riparian enhancement schemes on currently degraded rivers and river corridors.

Fisheries

To establish diverse and sustainable fish populations within the catchment.

To identify and address physical, chemical and biological factors preventing the achievement of the above.

With the co-operation of riparian owners and angling interests, increase the recruitment of both brown trout and coarse fish, by the physical manipulation of the habitat.

Heritage

To safeguard the special archaeological and heritage interest for which sites have been designated (eg. conservation areas).

To conserve areas of archaeological and heritage value.

Amenity and Recreation

To protect and promote all appropriate water-related recreational uses, including the provision of sufficient access as required for recreational purposes.

To ensure that the above is balanced and safeguards the riverine environment, nature conservation and landscape value of the Upper Thames.

Navigation

To maintain or improve water resources and physical characteristics in the catchment to sustain the Thames navigation.

Water Abstraction

To manage water resources to achieve the right balance between the needs of the environment and those of the abstractors.

To ensure that licence holders understand and comply with the terms and conditions of the licences.

To ensure that abstraction does not cause any deterioration of water quality or to aquatic or other water-dependent habitats.

Effluent Disposal

To control the discharge of effluent to the water environment in such a way that water quality objectives are achieved, and that nature conservation, fisheries interests and other uses are not compromised.

Rural Land Use

To influence and control future rural development in order to protect the water environment and seek enhancement through countryside initiatives.

Realise opportunities for environmentally sensitive agricultural practices in terms of pollution prevention measures, ESA and NVZ.

To de-intensify land use along river corridors and establish buffer zones, and optimize the use of 'set-aside'.

Urban Land Use

To influence and control future built development in such a way that the environmental values of the river corridor are maintained and enhanced, and to protect the integrity of the river corridor through urban areas.

To ensure the provision of infrastructure required to protect and enhance the water environment.

To influence and control infrastructure provision in such a way that other uses are not compromised.

Work with the Local Authorities to introduce best practice in surface water source control for some of the new development areas at Swindon.

Mineral Extraction and Solid Waste Disposal

To ensure the sustainable use of resources whilst protecting the existing nature conservation value of the Cotswold Water Park, (especially its nationally important bird populations), maintaining the landscape quality along the Thames and maximise the potential for enhancing the conservation value of the area by influencing restoration of future working, where appropriate, to provide wetland and open water habitat mosaics.

To control and influence mineral extraction, restoration and after-use and solid waste disposal in other areas of the catchment in such a way that other uses or resources are not compromised.

Flood Defence

To seek a reduction in the localised flood risk at Somerford Keynes, Ashton Keynes and South Cerney and investigate the role of the Cotswold Water Park (gravel extraction) in flooding/ flood alleviation and storage.

To continue weedcutting and other minor channel works as necessary to minimise flood risk and to ensure that conservation guidelines are adhered to for good working practice for environmental sensitivity during river management operations.

To satisfactorily implement the Standards of Service (SoS) policy in the Upper Thames catchment.

To implement the Thames Non-Tidal Floodplain Policy.

To improve, as appropriate, arrangements for flood forecasting and warning.

To continue to disseminate information on flooding and flood protection measures to local authorities who have permissive powers with respect to flood defence on "non-main" rivers.

GLOSSARY - TO BE ADDED

**NRA CONTACT NAMES AND ADRESSES
INCLUDING EMERGENCY HOT LINE - TO BE ADDED**