

catchment management plan



RIVERS AXE AND LIM action plan

January 1997



**ENVIRONMENT
AGENCY**

Further copies of this Action Plan can be obtained from:

Richard Parker
Environment Planner
Environment Agency South West Region
Manley House
Kestrel Way
Exeter EX2 7LQ

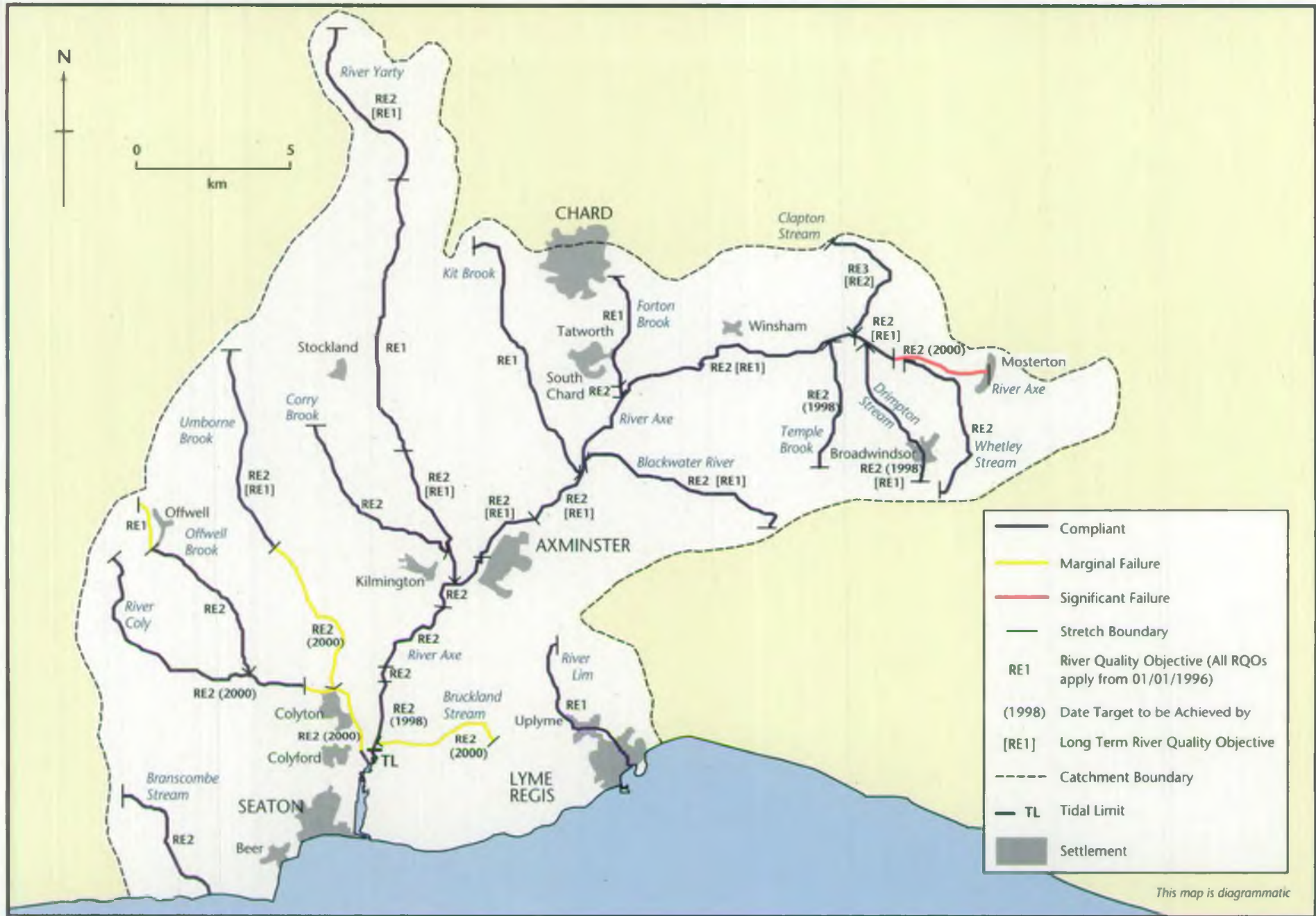
Tel: (01392) 444000

Environment Agency Copyright Waiver

This report is intended to be used widely and may be quoted, copied or reproduced in any way, provided that the extracts are not quoted out of context and that due acknowledgement is given to the Environment Agency.

Note: This is not a legally or scientifically binding document.

Map 2 -1995 Compliance with Proposed River Quality Objectives (River Ecosystem Classification)



Information correct as of November 1996

© Crown Copyright

This map is diagrammatic

map 2

Fold out for Map 2
1995 Compliance with Proposed River Quality Objectives



Key Statistics for the Rivers Axe and Lim Catchment

Catchment Area	443 km ²
River Length	River Axe 44.1 km
(upstream of Tidal Limit*)	River Lim 6.4 km
Location of source: River Axe	near Chedington, Dorset (ST 49 04)
River Lim	near Raymonds Hill, Devon (ST 31 96)
Population (1991)	40,000 (approx.)
Main Urban Areas	Axminster, Chard, Seaton
Average Annual Rainfall	945 mm
Industries	Agricultural (including creameries and dairies), tourism

* Tidal Limit as defined in Section 192 of the Water Resources Act, 1991 (Ref. 1).

Foreword

This Action Plan provides a blueprint for the future of the Rivers Axe and Lim Catchment, an important area of Devon, Dorset and Somerset. The Environment Agency, in partnership with local communities, will use this Plan to ensure that improvements in the local environment are achieved and that good progress is made towards the vision.

We are very grateful for the contributions made during the consultation period. I am sure that the local authorities, environment interest groups, and the public will look forward to taking this initiative forward and assist us in refining and developing the Plan as we all implement it.

Geoff Bateman

GEOFF BATEMAN
Area Manager (Devon)

ENVIRONMENT AGENCY



125087

map 1

Fold out for Map 1
Key Sites Relating to Issues in the Rivers Axe and Lim Catchment

Contents

Foreword	
Key Statistics for the Rivers Axe and Lim Catchment	(fold out flap)
Acknowledgements	ii
Catchment Vision	1
1. Introduction	2
1.1 The Environment Agency	2
1.2 Environment Planning	3
2. Review of the Consultation Process	5
2.1 Public Consultation	5
2.2 Results of Consultation and Further Action	5
3. Catchment Overview	6
3.1 Description	6
3.2 Review of Resources, Uses and Activities	6
4. Activity Tables	9
Table 1 River Quality Objectives	10
Table 2 International Commitments to Water Quality	11
Table 3 Water Resources	12
Table 4 Archaeology and Historic Environment	13
Table 5 Conservation of the Natural Environment	14
Table 6 Recreation	20
Table 7 Review of Flood Defence Operations	21
Table 8 Fisheries	22
Table 9 River Axe Proposed SSSI	26
Table 10 Catchment Erosion	27
5. Implementing the Plan: Monitoring and Review	28
Appendix 1 The Role of the Environment Agency	29
Appendix 2 Consultees who Responded to Consultation	30
Appendix 3 Guide to Consultation Report and Action Plan Issues	31
Appendix 4 River Quality Objectives	32
Glossary	34
Units and Abbreviations	37
References	38
Maps	
Map 1 Key Sites Relating to Issues in the Rivers Axe and Lim Catchment	<i>Fold out to front</i>
Map 2 1995 Compliance with Proposed River Quality Objectives	<i>Fold out to back</i>

ACKNOWLEDGEMENTS

We would like to thank all those who responded during the consultation period giving valuable contributions to this report. We would like to give particular thanks to the Rivers Axe and Lim Catchment Steering Group (see Section 5).

They are:

Name	Representing
D Walling	Regional Rivers Advisory Committee
D Braggins	Devon Fisheries Advisory Committee
C Pole-Carew	Riparian Owners (also Secretary of Axe Vale Rivers Association)
D Minchin	Riparian Owners
J Boulton	Chairman of Axe Fly Fishers (also on Axe Vale Rivers Association)
B Terry	Axe Fly Fishers
J Williams	Taunton Fly Fishing Club
C Pulteney	English Nature
D Campbell	Axe Vale and District Conservation Society
B Newbury	National Farmers Union
I Dunford	Local Industry (St Ivel)
T Gameson	South West Water Services Ltd.
D Eckhart	East Devon District Council
K Whetlor	Lyme Regis Town Council
N Butler	East Devon Heritage Coast
C B Tuke	Chairman, Axe Vale Rivers Association

Catchment Vision

Our vision for the River Axe and Lim Catchment is of a healthy and diverse water environment, where;

- water resources are used in an environmentally sustainable way
- the abundance and diversity of wildlife and habitats in the catchment is maintained and, where appropriate, restored or enhanced
- features of archaeological and historic interest linked to the aquatic environment are conserved
- existing discharges continue to improve to meet the most appropriate standards
- a sustainable agricultural and forestry system develops which reduces the risk of direct and diffuse pollution and improves the habitat of the river system and wetlands for wildlife
- the salmon run of the River Axe is restored
- peoples enjoyment and appreciation of the water environment continues to grow
- there is minimal risk to people and property from flooding.

The achievement of this vision will require close co-operation between many organisations and individuals. We recognise the importance of establishing links with local communities and representatives, and in particular in working with the local authorities.

vision

1. Introduction

1.1 The Environment Agency

The Environment Agency was formed on 1 April 1996, bringing together the National Rivers Authority (NRA), Her Majesty's Inspectorate of Pollution (HMIP), the Waste Regulation Authorities (WRAs) and some units of the Department of the Environment (DoE) dealing with the technical aspects of waste and contaminated land.

Our Principal Aim

Our aim as set out in the Environment Act 1995, is to protect or enhance the environment, taken as a whole, in order to play our part in attaining the objective of sustainable development.

Our Objectives

The Environment Agency works towards sustainable development through seven objectives, set by Ministers:

- An integrated approach to environmental protection and enhancement, considering the impact of all activities on natural resources;
- Delivery of environmental goals without imposing excessive costs on industry or society as a whole;
- Clear and effective procedures for serving its customers, including the development of single points of contact with the Agency;
- High professional standards, using the best possible information and analytical methods;
- Organisation of its own activities to reflect good environmental and management practice, and provision of value for money for those who pay its charges, and for taxpayers as a whole;
- Provision of clear and readily available advice and information on its work;
- Development of a close and responsive relationship with the public, including local authorities, other representatives of local communities and regulated organisations.

Our Role

Our work is divided into seven main functions:

- Flood Defence
- Water Resources
- Pollution Prevention and Control
- Navigation
- Fisheries
- Recreation
- Conservation.

These roles are explained in further detail in Appendix 1.

1.2 Environment Planning

The environment is subject to a wide variety of uses which invariably interact with and sometimes conflict with each other. The process of environment planning has been developed to help manage these interactions and conflicts for the overall benefit of the environment and its users.

The Environment Planning process within the Environment Agency includes the production of two documents; a Consultation Report and an Action Plan. The Consultation Report describes our vision for each catchment, identifies problems and acts as a focus for consultation between the Environment Agency and other interested parties. Following consultation, the Action Plan identifies actions to resolve the problems and issues. The Plans are part of an ongoing dialogue between ourselves and the various organisations and individuals involved in the protection and management of the environment, they also provide background data for Agency responses to development plans and highlight our concerns about development.

This Action Plan follows the production of the Rivers Axe and Lim Catchment Management Plan Consultation Report (Ref. 2) and the consultation period. The Action Plan will form the basis for improvements to the environment, chiefly the water environment, and primarily covers the five year period from 1997 to April 2001. Achievement of the Action Plan will be monitored and reported annually. Future annual reviews may also include new issues, covering all the responsibilities of the Agency.

The Rivers Axe and Lim Catchment Steering Group

This Steering Group represents a range of commercial, local authority and environmental interests who endorse the Consultation Report and Action Plan prior to public release (see Acknowledgements for a list of members). They will monitor the implementation of the Action Plan and provide the Agency with specific advice on the importance of issues within the catchment. They act as a communication link between the local community, the Agency and its committees and will help to promote and develop initiatives of benefit to the environment within the catchment. The Catchment Steering Group will meet twice yearly during the life of this plan.

Local Environment Agency Plans and Catchment Management Plans

Catchment Management Plans instigated by the NRA will continue to be called Catchment Management Plans, although new plans initiated by the Agency will be known as Local Environment Agency Plans (LEAPs). LEAPs slot into a sequence of plans which were being prepared by the former National Rivers Authority to cover all river catchments in England and Wales. We will use LEAPs to cover the same topics as Catchment Management Plans but they will also deal with new topics to cover the full range of our responsibilities.

LEAPs will eventually be produced for all catchments in England and Wales; replacing Catchment Management Plans where they exist.

Local Environment Agency Plans and Development Plans

While we can control some of the factors which influence the quality of the water environment, we have only limited control over the way that land is developed. This is the responsibility of local planning authorities.

County and district planning authorities plan and control development; although they must consult us on many types of development, they do not have to follow our advice. Local authorities prepare statutory development plans that set out the framework for land use changes within the area under their jurisdiction. These plans act as key instruments for determining planning

applications, and are, therefore, an important way of protecting the environment. We work closely with the local authorities in the production of development plans, to encourage the inclusion of policies which reflect our concerns and responsibilities.

We will continue to give advice to planning authorities, screening all planning applications to ensure that the environment is protected and flood risk is not increased. We will also encourage planning authorities to include environment protection policies in relevant local plans.

2. Review of the Consultation Process

2.1 Public Consultation

The issues listed in this Action Plan were identified in the Consultation Report or resulted from the consultation process. The Consultation Report was launched on 27th March 1996 and the consultation period concluded on 31st May 1996. During this time the Consultation Report was promoted by:

- Radio, television and press reports;
- A display at Axminster, Lyme Regis and Seaton libraries;
- An exhibition, with Agency staff available to deal with enquires, at Axminster Guildhall;
- The distribution of over 500 copies of the report and a large number of summary leaflets;
- Meetings with interested parties to discuss the plan.

2.2 Results of Consultation and Further Action

Forty-nine written responses were received of which 23 were questionnaire replies. All of these responses were considered and have provided valuable contributions to the formulation of this Action Plan. The respondents included statutory organisations, industry, landowners, sport and recreation groups and the public (see Appendix 2).

Several organisations indicated their strong support for the concept of catchment management planning. Our vision for the catchment was shared or fully supported by a large number of organisations. All comments have been considered and, where appropriate, incorporated in the Action Plan. Several changes to the issues raised in the Consultation Report have been made; issues have been renumbered, new issues added and existing issues modified (see Appendix 3).

Many suggestions were received regarding the wording and the layout of the Consultation Report. Although we will not republish the report, we will use some of the ideas suggested, such as the use of more visual information such as graphs or diagrams to improve future documents.

We asked consultees to list what they felt were the most important issues highlighted in the Consultation Report. The responses indicated that the following were the most significant issues:

- Marginal failure of proposed RQOs;
- Decline of important habitats and species;
- Failure to meet long term RQOs;
- Nutrient enrichment in the lower River Axe;
- Forecast deficits in public water supply;
- Need for improvement of conservation value of floodplain habitats;
- Lack of public access to the water environment.

We list actions to tackle these issues in the Activity Tables in Section 4.

3. Catchment Overview

3.1 Description

The Rivers Axe and Lim Catchment area covers 443 km², straddling Devon, Dorset and Somerset. It comprises the catchments of the Rivers Axe and Lim which drain to the sea at the coastal resorts of Seaton and Lyme Regis respectively (see Map 1).

The main stem of the River Axe flows through an almost unbroken agricultural landscape from its source to the sea. The Axe Valley is fairly broad, even at its uppermost limits, and is notable for its extensive floodplain through which the river meanders widely, creating features such as oxbow lakes. This floodplain has been changed by the major communication routes of the new A35 and the older railway. The presence of these man-made features has resulted in necessary but conspicuous erosion control measures.

The River Yarty, Corry Brook and Umborne Brook, originate on the steep slopes of the Blackdown Hills, where springs rising on the valley sides create wetlands and rough pasture. The upper valleys are well wooded; lower down, small fields, enclosed by hedges, are typical. The valleys finally open out as the tributaries meet the main river floodplain.

The River Lim, Branscombe Stream and a number of small tributaries of the River Axe flow through short, steep sided valleys cut into the open landscape of the Greensand and clay plateau backing the coast. The enclosed nature of the valleys contrasts with the larger arable fields and pastures of the plateau.

The River Coly, which rises 1.5 km south-east of Honiton, discharges to the Axe Estuary. The Axe Estuary is a valuable area for wildlife with mudflats and remnant saltmarsh interlaced with tidal creeks.

The coastal section of the catchment contains some of the region's most spectacular sites. Steep cliffs in the west are interrupted by small valleys, before rising again to sheer chalk cliffs at Beer Head. Further east, stretching from Axmouth to Lyme Regis, is the Undercliff area of woodland. This area has been proposed as a World Heritage Site.

The catchment is home to approximately 40,000 people. However many more visit during the summer months.

Apart from tourism, the catchment supports a mainly agricultural economy, light industry being limited to the main urban areas around Lyme Regis, Axminster, Chard, Seaton and Beer.

3.2 Review of Resources, Uses and Activities

These were described in detail in the Consultation Report. The following are key extracts:

Landscape, Wildlife and Archaeology

Although much of the catchment is under fairly intensive agricultural use, there are still a number of areas which support valuable habitats and species, including 20 Sites of Special Scientific Interest (SSSI) and 15 Nature Reserves. In addition it is likely that part of the River Axe will be notified as a SSSI for both its diverse and abundant flora and its fluvial geomorphological interest. The coastline includes parts of the Sidmouth to West Bay candidate Special Area of Conservation and the Lyme Bay Sensitive Marine Area. Other key wetland habitats are: springline mires; alder and willow carr; lowland heath; coastal flushes and estuarine habitat.

There are many important archaeological and historical features within the catchment. About 40 sites are recognised as being of national importance and are scheduled as Ancient Monuments; in addition three Historic Parks and Gardens are present.

Fisheries

Sea trout and brown trout are widespread throughout the River Axe subcatchment. Much of the spawning of both species takes place in tributaries of the main river, most importantly, the River Yarty. Angling for sea trout and brown trout is carried out throughout the catchment. The run of sea trout is presently above the average, which has reflected in high rod returns in the past three years. Prior to the mid 1960s, the River Axe supported a run of several hundred salmon and was the subject of a detailed investigation by the Ministry of Agriculture, Fisheries and Food (MAFF) from 1959-1978 with a trap below Axe Bridge. Numbers of fish returning to the river declined dramatically in the 1970s. There has been little evidence to indicate that salmon stocks on the River Axe are likely to recover naturally. Dace and roach are found in the lower reaches of the river although their numbers have declined markedly in the past 20 years.

The extent of the River Lim fishery is restricted by the size of the river, although, wild brown trout are common. Barriers in Lyme Regis prevent migratory fish entering the river to spawn. Bullheads, stone loach, minnows and eels are found at most locations.

Recreation and Amenity

Water based recreational use of the catchment is largely restricted to the coastal section, with few sites on the river or estuary available to the public. There is a limited access agreement for canoeing on the River Axe. The South West Coast Path is a national trail running along the coast; parts of the lower River Axe, Yarty, Coly and Umborne Brook also have stretches of bankside public access.

Flood Defence and Land Drainage

We maintain a number of flood defence schemes in the catchment. Other work, such as tree clearance, is undertaken as needs dictate. Major schemes have been carried out at: Colyton and Colyford on the River Coly; Axminster, Stafford Brook and Seaton on the River Axe; and at Lyme Regis on the River Lim.

The Built Environment and Development Plans

The catchment lies mostly within East Devon, South Somerset and West Dorset District Councils, with a small part within the Taunton Deane District. New Local Plans all have water protection policies, which should result in better future protection for the water environment from development. Development will be concentrated at Axminster, Seaton and Chard.

Mineral Extraction

There are four active quarries within the catchment; chalk and sandstone are worked at Uplyme, chalk and a sequence of hard chalk known as 'Beer Stone' are worked at Beer. There are two gravel workings at Yonder Hill near South Chard and Kilmington near Axminster.

Waste Disposal

There are 16 landfill sites (seven of which are open), one civic amenity site, two scrapyards and one waste transfer site in the catchment.

Farming

Agricultural land accounts for just under 93% of the catchment area, 80% of this is grassland. Farms in the catchment are the most common cause of pollution incidents. Although there has been considerable investment in farm waste storage facilities in recent years. A large section of the catchment falls within the Blackdown Hills Environmentally Sensitive Area (ESA). ESA is a MAFF

scheme designed to encourage farmers to adopt agricultural practices which will help to protect and enhance the environment.

Forestry

Forests and woodlands are widely scattered throughout the catchment. Ame's Plantation, on the River Lim, which is owned by the Forestry Commission and managed by Forest Enterprise, is of particular importance as it acts as a buffer to the river from the effects of agricultural pollution.

Water Abstraction and Supply

In the Rivers Axe and Lim Catchment, both rivers and groundwater are used for water supply. 84% of the total authorised abstraction is from rivers and is used mainly for public and private water supply, including use for fish farms, water power and industrial use. 16% of the total authorised abstraction is from groundwater and is used, mainly for public water supply. The catchment is underlain by two major aquifers, the Upper Greensand and the Chalk, although their significance in this catchment is somewhat diminished because they are isolated and highly fragmented outcrops. Both Wessex Water Services Limited (WWSL) and South West Water Services Limited (SWWSL) provide mains supplies within the catchment. Wimbleball Reservoir, located in the River Exe Catchment, is another major source of much of the catchment's public water supply.

Effluent Disposal

Axminster Sewage Treatment Works (STW) has the largest consented discharge in the catchment. The second largest is from St Ivel Dairy in Chard.

Since the commissioning of the Lyme Regis Sewage Scheme there have been no discharges of treated sewage effluent from SWWSL STWs to the River Lim, although a number of combined sewer overflows exist.

First time sewerage (connection to public sewer) is currently being agreed at Whitestaunton, but is still needed at several sites, particularly at Clapton near Crewkerne.

Improvements to the Beer Head Outfall are required under the appropriate treatment provision of the EC Urban Wastewater Treatment Directive.

4. Activity Tables

The following eight tables outline the actions needed to address the issues we identified in the Consultation Report together with additional issues raised during the consultation process. The issues and activities are not presented in any order of priority.

The tables show the following information:

- Organisations which will implement the proposed activities, either in a lead role or as a key supporter, are listed under the heading 'Action by Lead *Other*'.
- A timetable for the activity.
- An estimate of cost to us over the next five years, where available. The initials n/a means that we do not contribute to the funding of the action, 'unknown' means that no cost estimate is available at present.
- The financial years covered by this plan are represented by a single year, for example, '97' is the financial year April 1997 to March 1998.
- Please refer to the glossary and abbreviations for the definition of acronyms.

The following points should also be noted:

- Our everyday work commits substantial resources to monitoring and managing the environment. Some of this work was explained in the Consultation Report.
- Some actions will require feasibility studies and cost-benefit appraisal of options prior to work commencing. In some cases, depending on the outcome of these studies, further action may not be justified. The Environment Agency and the 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.
- Should more issues become apparent during the life of this Plan, further actions will be added at succeeding Annual Reviews.

Table 1 River Quality Objectives

We aim to maintain and, where appropriate, improve the quality of water for all those who use it. This is achieved by setting water quality targets for the catchment based on:

- Standards laid down in EC Directives (see Table 2);
- River Quality Objectives (RQOs) to protect recognised uses (see Appendix 4).

In the Consultation Report (Ref. 2) we proposed RQOs for the whole catchment. Following the consultation process, these targets have now been finalised (see Map 2).

The water quality assessment against the proposed RQOs in the Consultation Report, was based on three years of data between 1992 and 1994. We have now updated this assessment based on three years of data between 1993 and 1995. The water quality status of some stretches has improved in this recent assessment; the Temple Brook, Drimpton Stream and the River Coly - source to Heathayne Farm, and the River Axe from Whitford Bridge to the Normal Tidal Limit, now comply with their RQOs. The Blackwater River also complied with its long term RQO of RE1.

The stretch of the Axe from Mosterton to Seaborough has, however, deteriorated and now significantly fails its RE2 objective, which is to be achieved by the year 2000. Mosterton residents have expressed concern about sewage discharges from a storm overflow at Mosterton Sewage Pumping Station, we have investigated this complaint but have so far been unable to substantiate this claim. We have asked local residents to report operation of the overflow to us. There are no other significant discharges in the area and the area is intensively farmed. We will be carrying out investigations in this area to identify the problem.

Long term RQOs have been set for a number of stretches in the catchment. These are objectives we would like to achieve, but the actions required to achieve them are long term ones and are outside the direct control of the Environment Agency. Much of the area is intensively farmed and we will be working with others to target these stretches for the uptake of schemes that encourage less intensive land use, such as Countryside Stewardship. We will use these long term RQOs as a basis for setting consents for new discharges and planning for future water quality improvements.

Issue	Actions	Action By Lead Other	Cost to Agency (£)	Financial Year				
				97	98	99	00	01
1a. Significant failure of RQO in River Axe; A3066 Bridge Mosterton - Seaborough.	i. Conduct investigation work and enforce pollution control legislation where necessary.	Agency	3 k	●				
	ii. Work with others to target this river stretch to promote the uptake of less intensive agricultural schemes, such as Countryside Stewardship.	Agency MAFF, CoCo, ADAS, farmers	unknown		●	●	●	●
1b. Marginal failure of RQO at: Offwell Brook - Source to Offwell (RE1); Umborne Brook - Triffords Farm to Coly Confluence (RE2 2000); Bruckland Stream (RE2); River Coly - Heathayne Farm to Normal Tidal Limit (RE 2000).	i. Improve maintenance at Offwell STW.	SWWSL	n/a	●				
	ii. Review descriptive consent.	Agency	unknown	●				
	iii. Liaise with owner to improve discharge at Wilmington Trout Farm.	Agency Fish farm owner	< 1 k	●	●			
	iv. Carry out improvements to STW at Shute.	EDDC	n/a					
	v. Conduct farm visits.	Agency Farmers	3 k		●			
	vi. Seek improvements to discharges at Combyne.	Agency Residents	unknown	●	●	●		
	vii. Investigate sources of poor water quality.	Agency	unknown	●	●			
1c. Failure to meet long term RQOs at:								
Drimpton Stream (RE1), Clapton Stream (RE2), Blackwater River (RE1), River Yarty (RE1), River Axe - Seaborough to Bow Bridge Axminster (RE1).	i. Conduct farm visits.	Agency	4 k		●		●	
	ii. Work with others to target these river stretches to promote the uptake of schemes that encourage less intensive land use, such as Countryside Stewardship.	Agency Farmers, MAFF, CoCo, ADAS	unknown		●	●	●	●

Table 2 International Commitments to Water Quality

EC Urban Wastewater Treatment Directive

This Directive (Ref. 3) specifies minimum standards for levels of sewage treatment and sewerage systems. It requires higher standards of treatment (secondary treatment) for discharges to 'Sensitive Areas'. Sensitive Areas are those waters which receive discharges serving population equivalents of greater than 10,000 and are, or may become, eutrophic in the future. We are

responsible for making sure that discharges receive the level of treatment specified in this Directive.

The Axe Estuary has been identified as a candidate Sensitive Area (Eutrophication). The qualifying discharge is Seaton STW (population equivalent 15,000). We have been monitoring the estuary to determine its trophic status and the principal sources of nutrients to the estuary (see Issue 2a). If the data shows the estuary to be eutrophic, and Seaton STW is found to be a significant source of nutrients contributing to eutrophication, we will recommend to the DoE that the estuary becomes a Sensitive Area.

Annex 1A Reduction Programme Target

At the second and third North Sea Conferences in 1987 and 1990, the UK Government made a commitment to reduce the amount of priority hazardous substances (e.g. mercury, arsenic, DDT etc.), known as 'Annex 1A' substances, entering tidal waters from rivers and direct discharges.

One site in the catchment, at Axe Bridge on the River Axe, is monitored for Annex 1A purposes. Significant loads of cadmium, copper, zinc, nickel, lead, chromium and arsenic were recorded at this site during the period 1990-1995. However, there have not been any exceedances of Environmental Quality Standards for these substances at this site, and we are therefore planning no further action. We will continue to monitor for these substances and, where necessary, use our powers to control their entry into the environment.

Issue	Actions	Action By Lead Other Agency	Cost to Agency (£) 7 k	Financial Year				
				97	98	99	00	01
2a. Nutrient status of the Axe Estuary.	i. Collect and analyse chemical and biological monitoring data to determine trophic status of the estuary and source of nutrient inputs and seek improvements if appropriate.			●	●			

Table 3 Water Resources

We need to ensure there is an adequate public water supply now and in the foreseeable future. Most of the catchment lies within SWWSL's Wimbledon Strategic Supply Zone (see Map 1), where deficits in supply have been forecast. These forecast deficits will be reached here by 2006 under the high demand scenario and by 2011 under the low demand scenario¹. (see note on opposite page)

The options that we are promoting to meet this deficit, and more importantly to ensure that the low demand scenario is the one that actually occurs, are outlined below in order of preference (also see Issue 3a):

- encourage metering in all new developments;
- encourage selective metering as an alternative to new resources;
- encourage and publicise efficient water use and recycling;
- promote the efficient use of water for agricultural purposes;
- encourage leakage reduction to a target of at least 200 l/property/day and set local leakage targets;
- encourage water companies to make more efficient use of water resources.
- welcome and encourage the water efficiency plans which OFWAT has asked each water company to publish.

It is anticipated that the Wimbledon Pumped Storage Scheme will meet the deficit in this supply zone for many years to come. This scheme involves

pumping water in the winter from the River Exe at Exebridge into Wimbeball Reservoir for storage and subsequent use during the summer months. An operational water management strategy will define the rules for the best use of this resource.

Overall the catchment is not stressed by abstraction; however, one localised problem was identified in the Consultation Report in the Umborne Brook at Wilmington Trout Farm. At this site there is a deprived reach of river of approximately 200 m in length. During the late spring to autumn the majority, if not all, of the flow is diverted from the brook, limiting fish movement. The owner of the trout farm has carried out some remedial works, however further work and better working arrangements may be required at this site in order to alleviate the problem.

¹ The high scenario assumes high growth in consumption, no improvements to reduce losses and no increase in domestic metering to reduce water use. The low scenario assumes low growth in domestic consumption, no growth in industrial/commercial consumption, broad company leakage targets for SWWSL and WWSL and little or no increase in the proportion of domestic properties subject to metering above 1991 levels (also see Ref. 4).

Issue	Actions	Action By Lead Other	Cost to Agency (£)	Financial Year				
				97	98	99	00	01
3a. Forecast deficits in Wimbleball Public Water Supply Zone.	i. Complete and operate Wimbleball Pumped Storage Scheme Operational Management Strategy (see list of options in supporting text).	Agency, SWWSL	2 k					
3b. Low flows in the Umborne Brook.	i. Complete calibration work to enable precise gauging of abstraction.	Agency	< 1 k					

Table 4 Archaeology and the Historic Environment

The catchment contains many sites and features of historic and archaeological interest. Although there is a wealth of information from a wide range of sources on the archaeological and historic value of the catchment, it is not in a useable format. Many organisations would benefit from the production of a simple document based on a rapid archaeological assessment of the wider area (see Issue 4a). This could cover either the wider catchment or fit political boundaries.

The Taunton Stop Line has been identified as an important feature of the catchment. This Second World War defence is being studied and recorded by the Defence of Britain Project (see Issue 4b). Some of the pill boxes are close to the River Axe and are being undermined by erosion, creating a potential for both the loss of an historic feature and obstruction to flow (see Issue 4c). We may need to ensure that sites at risk are properly recorded, or even protected.

The River Lim has a leat at Middle Mill Weir which is reported to be of historic and amenity value. Lyme Regis Town Council are keen to see if this leat could be reinstated.

Issue	Actions	Action By Lead Other	Cost to Agency (£)	Financial Year				
				97	98	99	00	01
4a. Lack of archaeological information in a useable format.	i. Discuss options for a rapid archaeological assessment of the whole catchment with potential partners.	DCC, Agency EDDC, DAS, AVCS	< 1 k					

Issue	Actions	Action By Lead Other	Cost to Agency (£)	Financial Year				
				97	98	99	00	01
4b. Potential loss of historic pill boxes.	i. Sites need to be properly assessed and recorded and where necessary protected.	Defence of Britain Project	n/a	●				
4c. Potential obstruction to flow from undermined pill boxes.	i. Actions dependant on assessment of 4b.	Agency	Unknown		●			
4d. Concern over loss of amenity at Middle Mill Weir.	i. Examine feasibility of reinstating leat at Middle Mill Weir, taking account of environmental and flood defence considerations.	Lyme Regis Town Council Agency	< 1 k	●				

Table 5 Conservation of the Natural Environment

Introduction

This catchment, like much of lowland Britain, has lost a large proportion of its semi-natural habitats. Many losses can be linked to the drainage, improvement, expansion and continued intensive use of agricultural land (Issue 5a). Some habitats, particularly wet grasslands, are also vulnerable to neglect or non-agricultural threats.

In today's agricultural landscape, rivers and wetlands provide refuge for many species that would have been widespread before these changes; the conservation of the quality of rivers and wetlands is therefore vital in this catchment. Current initiatives to classify and describe the area, such as the Natural Areas Project, and develop plans for the protection of key habitats and species, such as the Biodiversity Action Plan initiative, will guide us and others in their work, to encourage wise use of environmental resources and secure sustainable environmental improvements.

Natural Areas Project

English Nature and the Countryside Commission are working on a programme to describe England according to natural and cultural boundaries. Core Profiles are being written for these Natural Areas which will set out broad objectives and visions for their future protection and enhancement. This catchment includes sections of the Lyme Bay Maritime, Blackdown Hills and Wessex Vales Natural Areas. As yet, no profile is available for the Wessex Vales Natural Area.

Biodiversity Action Plans

The tables that follow contain references to the Rivers and Wetlands Biodiversity Action Plan (R&W BAP) for Devon. For full details of the biodiversity initiative please refer to the original documents (Refs. 5 - 11). The Rivers and Wetlands Biodiversity Action Plan, Regional Biodiversity Initiative and Natural Area Profiles will help us to prioritise our work. Priorities in this catchment are:

- **Habitats:** Aquatic plant communities; river geomorphology; estuarine habitats including saltmarsh and reedbed; alder and willow carr; lowland grazing marsh; spring-line mires; marine habitats, especially underwater reefs; and coastal geology.
- **Species:** Otter; water vole; sand martin; kingfisher; marsh fritillary; medicinal leech; sunset star coral; pink sea fan; and short-leaved water starwort.

Freshwater

Many of the rivers in this catchment demonstrate excellent examples of ongoing fluvial processes, such as erosion and deposition, and channel or floodplain features such as meanders, eroding earth cliffs and old oxbows. It is important that these processes are allowed to continue wherever possible, provided important man-made or natural assets are not at risk, not only in the nationally important Proposed River Axe SSSI, but also elsewhere (see Issue 5i). Some mechanism to encourage landowners to take up management which encourages conservation of these features may be needed.

The lower River Axe and River Yarty valleys contain large areas of floodplain grassland, much of which is presently of only moderate wildlife value. There may be opportunities to enhance them through various agri-environment schemes administered by MAFF. Adjacent to the estuary are fairly extensive areas of grazing marsh, some of which still retain remnant saltmarsh species. There is a proposal to create a Local Nature Reserve on parts of these marshes. They have great conservation potential but changes in existing management may be needed. Raising water levels and reducing agricultural productivity may be options, but these are difficult to achieve without the right incentives (see Issue 5f).

The Blackdown Hills contain examples of spring-line mires (wet grassland/bog habitat) which are species rich and support similar plant and animal communities to the Culm Grasslands of north-west Devon. Much of this habitat has been lost, often as a result of agricultural improvement or neglect and there is a need for restoration or recreation (see Issue 5b). Associated species should benefit generally, but particular management and action is needed to encourage the recovery of the marsh fritillary butterfly. Breeding curlew are also present but only in low numbers.

Wet woodland or carr is present in a few areas where there is poor or impeded drainage, with a particularly good example on the River Yarty. These areas provide valuable cover for species such as otter, birds and a variety of invertebrate species. Current farming practices mean that fewer new sites are allowed to develop; unrestricted stock access also results in a lack of bankside tree regeneration. We must also keep track of the progress of alder root disease which has been found on the River Axe and which threatens many existing bankside trees. Some new planting may be appropriate, together with measures to ensure protection (see Issue 5c).

Ungrazed or uncut areas of tall river margin vegetation also have significant wildlife value; water voles, for example, need extensive cover if they are to thrive (see Issue 5e). Invasive alien plant species such as Himalayan balsam have replaced natural vegetation in many areas. We control these species on our own land and encourage others to do the same. We have produced a booklet, available on request, that gives advice on controlling these species (see Issue 5d).

Otters, although present in small numbers in parts of the catchment have, following their major decline in the 1960s and 1970s, failed to recolonise to the same extent as on many other rivers in Devon. The reasons for this are at least in part unclear and need more investigation. Encouraging recovery in this catchment is a priority for us in our role as species contact point under the biodiversity initiative. We will implement the species plan in the R&W BAP as far as possible (see Issue 5i).

Water voles have suffered a sharp decline nationally over recent decades. Their status in this catchment is uncertain, but there appears to be areas of suitable habitat, or where such habitat might be improved. Plans for this species are well developed both locally and nationally and we will adopt the recommendations (see Issue 5j).

Riparian birds such as sand martins and kingfishers have high popular appeal; they are vulnerable to loss of nest sites as a result of erosion control works to rivers, as well as adverse conditions either here or in wintering areas. Concern has been expressed at changes in the population and we need to monitor this with the help of other organisations (see Issue 5k). We will ensure all known nest sites are protected during our own work or when authorising the actions of others.

The coast

The coast includes some of the UK's best vegetated sea cliffs, which are proposed as Special Areas of Conservation under the EC Habitats Directive (Ref. 12). We have special responsibilities to safeguard sites of international importance when planning our own work or considering the actions of others. There may also be a requirement to review existing authorisations such as consents to discharge effluent or licences to abstract water from these sites (Issue 5a).

Coastal flushes provide a habitat which supports uncommon invertebrate communities that are vulnerable to changes in hydrology or nutrient levels. Fairy shrimp, which live in temporary pools at only a few sites nationally, are also present and under some threat. We will ensure that these habitats and species, like others of value, are protected when we authorise the activities of others.

The whole of the Lyme Bay coastline is internationally important for its geological features and for this reason, combined with its biological interest, has been proposed as a World Heritage Site. Care is needed when carrying out works to avoid damaging this interest; this will be taken into account in the forthcoming Shoreline Management Plan (see Table 7). This section of coast is also of particular importance for fossils; it is popular with collectors and guidelines may be needed to ensure their continued protection. Sites of regional earth science importance are being identified to aid their protection. We will support this initiative and encourage conservation of recognised features (see Issue 5l).

The Axe Estuary contains extensive mudflats, saltmarsh and reedbeds. It also supports a variety of mud-dwelling invertebrate communities and consequently attracts reasonable numbers of waders and wildfowl. In places estuarine habitats are being damaged by public access. In some places it may be possible to extend some valuable habitats (Issue 5g).

Much of the shoreline is an exposed shingle ridge with boulder reefs below. Marine habitats are often more easily damaged than is realised. In this part of Lyme Bay, areas of offshore rocky reefs support unusually large and mature populations of corals, sea fans and sponges. These are vulnerable to damage by inappropriate fishing methods and are known to have deteriorated significantly in value over recent years (see Issue 5h).

Issue	Actions	Action By Lead Other	Cost to Agency (£)	Financial Year				
				97	98	99	00	01
5a. General threat to key habitats and species in the catchment as a whole.	i. Continue development and implementation of the R&W BAP.	DWT Agency, EN, RHIER, LAs	5 k (1997)	●	●	●	●	●
	ii. Develop Biodiversity initiatives e.g. County Nature Conservation Strategy, Regional Habitat and Species Action Plans.	DCC, RSPB, EN Wildlife Trusts Agency, LAs	2 k p.a.	●	●	●	●	●
	iii. Confirm actions required relating to existing authorisations to comply with EC Habitats Directive.	Agency EN	unknown	●	●	●	●	●

Issue	Actions	Action By Lead Other	Cost to Agency (£)	Financial Year				
				97	98	99	00	01
5b. Spring-line mire habitat and associated species in decline and under threat.	i. Enter 80% of catchment resource into protective management schemes by 2005.	DWT, ADAS, ESA Officers EN	n/a					
	ii. Produce list of priority sites for restoration.	DWT EN, Agency	< 1 k	●				
	iii. Implement and promote actions from R&W BAP for marsh fritillary.	Butterfly Cons. Soc., DWT Agency, EN, Blackdown Hills JAC	unknown	●	●	●	●	●
	iv. Implement and promote actions from R&W BAP for curlew.	DWT Blackdown Hills JAC, EN	n/a	●	●	●	●	●
<i>Targets:-No further loss of existing resource.</i> <i>-Restore 20 ha of mire habitat by 2005.</i> <i>-Maintain existing marsh fritillary populations.</i> <i>-Increase breeding curlew numbers by 25% by 2010.</i>								
5c. Loss of wet woodland (carr) and bankside trees.	i. Achieve better understanding of extent and value of existing resource.	DWT, Agency	2 k	●				
	ii. Liaise with landowners and encourage sensitive farming practices including the restriction of stock access to sites of potential bankside tree regeneration.	Blackdown Hills JAC, Agency	unknown		●	●		
	iii. Identify areas of river valleys where tree planting will not increase flood risk; and encourage planting in those areas.	Agency	2 k p.a.	●	●	●	●	●
	iv. Continue to monitor extent of alder root disease.	Agency	<1 k p.a.	●	●	●	●	●
<i>Target:-Recreate 5 ha of wet woodland by 2005.</i>								
5d. Spread of invasive plant species.	i. Monitor extent and spread of invasive alien species; Himalayan balsam, Japanese knotweed, giant hogweed.	Agency Riparian owners	< 1 k p.a.	●	●	●	●	●
	ii. Control invasive species on Agency owned or managed land.	Agency	unknown	●				
	iii. Promote control of invasive species by others, especially on land of conservation value or where rights of way exist or are developed.	Agency, DCC, EDHCS, EDDC, Parish Paths Initiative NT, BTCV	< 1 k p.a.	●	●	●	●	●

Issue	Actions	Action By Lead Other	Cost to Agency (£)	Financial Year				
				97	98	99	00	01
5e. Loss of marginal habitats.	i. Encourage riparian owners to provide suitable conditions for development of more extensive marginal vegetation.	Agency	< 1 k p.a.	●	●	●	●	●
5f. Wildlife value of floodplain habitats restricted by agricultural practices.	i. Produce list of priority sites for management.	DWT, Agency, EN, EDHCS, other Wildlife Trusts RSPB	< 1 k	●	●			
	ii. Implement and promote actions from R&W BAP to improve conservation value of floodplains, grazing marsh and associated species.	Agency, DWT, EN, EDHCS RSPB	unknown	●	●	●	●	●
	iii. Develop a water level management plan for the grazing marshes adjacent to the Axe Estuary to improve their conservation value.	EN, Agency, EDDC DWT, EDHCS, occupiers	5 k		●			
	iv. Seek to influence levels of payment and priorities for agri-environment schemes to encourage wider uptake.	Agency MAFF, EN	< 1 k p.a.	●	●	●	●	●
	<i>Targets:-Maintain existing area of floodplain habitat with high conservation value.</i> <i>-Increase by 20 ha floodplain grassland managed for conservation by 2000.</i> <i>-Enhance value of 10 ha of degraded grazing marsh by better management of water levels by 2000.</i> <i>-Increase numbers of breeding waders by 20% by 2005.</i>							
5g. Damage and disturbance to estuarine habitats and species.	i. Ensure public access arrangements and management of banks etc. do not adversely affect estuary through increased disturbance.	Agency, EDHCS	< 1 k	●	●	●	●	●
	ii. Promote and implement, as appropriate, actions from the R&W BAP for reedbeds.	DWT Agency, landowners	< 1 k	●	●	●	●	●
	iii. Investigate possibility of saltmarsh creation associated with MAFF habitat scheme.	Agency, ADAS EDHCS	< 1 k	●	●			
	<i>Targets:-Maintain and seek to increase numbers of waders and wildfowl using the estuary.</i> <i>-Actively manage all reedbeds > 0.5 ha for wildlife.</i> <i>-Create additional reedbed site > 0.5 ha in lower River Axe Valley by 2000.</i>							

Issue	Actions	Action By Lead Other	Cost to Agency (£)	Financial Year				
				97	98	99	00	01
5h. Lack of public awareness of the high value and threats to marine habitats.	i. Examine possibility of producing, with others, interpretive material (such as information boards and leaflets) highlighting value of marine habitats and species.	EDHCS, EDDC Agency	< 1 k		●			
	ii. Work with Sea Fisheries Committee to minimise damage to valuable habitats and features by inappropriate fishing methods.	DSFC Agency	< 1 k		●			
5i. Failure of otters to recolonise the catchment in expected numbers.	i. Promote and implement, as appropriate, otter action plan from R&W BAP (includes survey work, habitat restoration, investigations into prey availability, research into levels of contaminants etc.). <i>Targets:-Restore breeding otters to whole of catchment by 2005.</i> <i>-Ensure road casualties are minimised by appropriate preventive measures.</i>	DWT, Agency EDDC, volunteers, riparian owners, other Wildlife Trusts	2 k p.a.	●	●	●	●	●
5j. Decline of water voles.	i. Promote and implement, as appropriate, water vole action plan from R&W BAP (includes survey, improvement of riparian habitat, awareness raising, monitoring of mink numbers etc.). Also see Issue 5e. <i>Targets:-Identify current distribution by 1997.</i> <i>-Achieve return to 1970s range by 2010.</i> <i>-Restore 2 km of suitable habitat by 2005.</i>	DWT, Agency EDDC, volunteers, riparian owners, other Wildlife Trusts	2 k p.a.	●	●	●	●	●
5k. Loss of nesting sites for riparian birds.	i. Support county-wide survey of sand martin nest sites.	DBWPS Agency, RSPB	unknown		●			
	ii. Survey Rivers Axe and Lim to identify kingfisher nest sites.	DBWPS Agency, RSPB	unknown		●			

Issue	Actions	Action By Lead Other	Cost to Agency (£)	Financial Year				
				97	98	99	00	01
51. Loss of earth science features (e.g. rock exposures and floodplain forming processes).	i. Support the designation of Lyme Bay coastline as a World Heritage Site.	Agency, EN, LAs	<1 k p.a.	●	●			
	ii. Raise public awareness of importance of earth science and promote code of practice for fossil collection.	County RIGS Groups LAs, Agency, EN	<1 k p.a.	●	●	●	●	●
	iii. Promote measures to prevent loss of earth science sites and features in rivers and floodplains.	Agency	unknown	●	●	●	●	●
	iv. Support programme of identification and documentation of County Geological Sites.	County RIGS Groups LAs, Agency, EN	<1 k p.a.	●	●	●	●	●
	v. Seek to develop schemes that reduce the impact on landowners of using sympathetic management practices, or of allowing geomorphological processes to proceed.	Agency, MAFF, DCC	unknown	●	●			

Table 6 Recreation

Many people spend their spare time enjoying our rivers and coasts. Where we can we try to improve facilities for these people, particularly if land is in our control, but we must always safeguard the environment from the damage that they might cause.

Access to rivers in the Axe and Lim Catchment is restricted to existing footpaths and other rights of way. Many of these routes are difficult to use especially for the less able (Issue 6a). We do not encourage new access routes or promote the use of particular rights of way without the support of landowners and countryside interests. However, we have a general duty to promote the recreational use of water in England and Wales and we will support sensitive access initiatives that respect the interests of local people.

Issue	Actions	Action By Lead Other	Cost to Agency (£)	Financial Year				
				97	98	99	00	01
6a. Public access to the water environment often difficult especially for the less able.	i. Work with others to provide and maintain good access, whilst protecting the wildlife and the interests of landowners.	Agency, EDHCS, LAs, Blackdown Hills JAC, DCC, CoCo Users, riparian owners	unknown	●	●	●	●	●

Table 7 Review of Flood Defence Operations

All rivers are classified as either 'main river' or ordinary watercourse (sometimes referred to as non-main river - see Glossary for definition of main river). We supervise all flood defence matters but have special powers to carry out or control work on main rivers and sea defences. Local authorities also have powers to carry out sea-defence work, together with coast protection work and flood defence on ordinary watercourses.

We are a member of the Lyme Bay and South Devon Coastline Group, led by West Devon District Council, which includes other coastal defence bodies such as local authorities. This Group will oversee the production of the Shoreline Management Plan for the South Devon Coastline ensuring that coastal defences take full account of coastal processes. An investigation is to be undertaken with wide consultation prior to the adoption of the plan. Attention to environmental aspects is particularly important as the area has potential Special Area of Conservation and World Heritage site status.

We operate a flood warning system across the catchment. From 1 September 1996, we took the lead in passing flood warning to people who are at risk from flooding, so that action can be taken to protect themselves and their properties. Over the next five years we will be improving the warning service so that more information reaches those who need it (see Issue 7a).

We are required by the Department of the Environment Circular 30/92 'Development and Flood Risk', to liaise closely with local planning authorities on flooding and surface water runoff matters. This ensures that consideration of the flood defence risks of development is an integral part of the decision making process. In this respect we have the responsibility to prepare surveys under Section 105 of the Water Resources Act 1991 to define the nature and extent of flood risks (see Issue 7b). An indicative floodplain survey has been carried out for this catchment, but this does not contain a high degree of detail and further analysis may be required by planning authorities.

We maintain rivers and flood defence structures to minimise the risk of flooding. To continue to improve the efficiency and effectiveness we will target our efforts to areas of greatest need using the Flood Defence Management System. Comparing actual standards of flood defence against targets is an important part of this process.

Issue	Actions	Action By Lead Other	Cost to Agency (£)	Financial Year				
				97	98	99	00	01
7a. Potentially inadequate flood warning action.	i. Complete the review of flood warning study and where necessary improve flood warning at some locations.	Agency	10 k	●				
7b. Planning and flood risk.	i. Provide information (S105 Surveys) to planning authorities to prevent inappropriate development in the floodplain.	Agency Planning authorities	5 k	●				

Table 8 Fisheries

Salmon Management

Prior to the mid-1960s, the River Axe Catchment supported a major salmon run. Over the past 30 years there has been a dramatic decline with returns from the rod fishery being reduced to almost nil (see Issue 8a). There has been some recent evidence to suggest that a small number of salmon may be returning to the river. It is probable that this is as a direct result of works carried out by the NRA in a rehabilitation programme which commenced in 1990-91. We will attempt to build on these improvements by carrying out a programme of habitat improvements and fish stocking in conjunction with angling interests and riparian owners. 1997 will be the last year that we can fund the stocking programme as our hatcheries at Endsleigh and Colliford are being closed down. Continuous stocking with juvenile salmon is considered to be an important component of the rehabilitation programme, and we will be making efforts to identify external sources of funding to allow it to continue.

We have taken over the Strategy for the Management of Salmon, launched by the NRA in February 1996 (Ref. 13). Salmon Action Plans will be developed for all salmon rivers in England and Wales with the following aims: safeguarding salmon stocks, maximising economic/social benefits, and ensuring long term improvements. Each Plan will: describe the fishery and how it is performing; identify the key issues in each river system; set fishery targets and fishing effort controls and outline a programme of improvement. We intend to develop a Salmon Action Plan for the Rivers Axe and Lim by 1998 (see Issue 8b).

Barriers

In the River Axe there are several major weirs, only some of which are passable to migrating fish (see Issue 8c).

Both Lexhayne Weir and Wilmington Weir on the Umborne Brook are major obstacles to fish migration with passage only possible during very high flows; high quality spawning areas are located above the weirs so making them passable to migrating fish is important. Of lower priority are other structures within the catchment which are less significant because the quality of spawning areas above them is poor. It must be considered, however, that improvements in water quality may increase the spawning potential of these areas and the priority for the installation passes may alter.

'Irish Bridges', built to allow crossing points, are present on several smaller streams within the catchment. The structures can become blocked preventing fish migration. Only one 'Irish Bridge' on the Branscombe Stream acts as a barrier to fish migration in the catchment. We restrict the construction of new 'Irish Bridges' particularly in sensitive areas, and seek to modify or remove problematical structures.

In most cases we will have difficulty in funding the installation of fish passes, and we will be largely dependent upon external funding or collaborative projects to ensure their completion.

Brown Trout Fishery

Historically, riparian owners and fishery interests within the catchment have stocked various reaches of the River Axe with farmed brown trout of takeable size, from a variety of sources. This practice may have a detrimental effect on the native population through creating competition for food and available habitat, and increasing predation of native juveniles. Furthermore, the introduction of farmed fish will inevitably modify the genetic integrity of stocks native to the catchment.

Where stocking is thought to be of overall benefit to the fishery, all fish stocked should originate from within the catchment (see Issue 8d).

Fisheries interests have identified that, in their view, the quality of the brown trout fishery in the catchment has declined in recent years (see Issue 8e). In an effort to improve stock levels a programme of restocking was started in 1990 and habitat restoration undertaken in appropriate areas. Continued efforts to increase the population to that of previous years will continue.

Survey data from the 1970s showed that the middle and lower reaches of the River Axe supported large stocks of coarse fish, mainly dace and roach. In recent years there has been a decline both in numbers and size of populations especially of the larger fish (see Issue 8f). We will work with local fisheries associations to investigate the current status of stocks.

It is widely accepted in angling circles that in recent years there has been a marked increase in predation by fish-eating birds on freshwater fisheries. Anglers on the River Axe are no exception and believe the numbers of cormorants observed frequently in the middle and lower reaches of the river are a cause for concern. Freshwater fish species are vulnerable to predation by birds and are thought to be taken by cormorants at various locations in the catchment. We shall not support licensed killing of fish-eating birds, until and unless proof of serious damage has been established, and killing proven to be the most effective means for preventing significant loss to fish stocks. However, we are committed to working positively with owners and anglers to establish the full facts in each situation (see Issue 8g).

There have been a number of instances recently of riparian owners excavating the river channel flowing through their land. Many of these works do not require the consent of the Agency, and can cause serious damage to the fishery by destroying spawning beds and nursery areas (see Issue 8h).

The decline in fish runs is also linked to high levels of salmonid poaching in adjacent coastal waters and some poaching in the estuary with fixed gill nets. Prior to the 1980s, this was a major issue and large numbers of nets were operated along the coast ostensibly for the capture of sea fish. Changes in legislation has resulted in the creation of areas closed to netting, which with increased levels of enforcement have substantially reduced illegal capture in coastal waters (see Issue 8i).

Concern about the impact of sediments on the salmonid fishery is addressed in Table 10 on Catchment Erosion.

Issue	Actions	Action By Lead Other	Cost to Agency (£)	Financial Year				
				97	98	99	00	01
8a. Decline in runs of salmon. <i>NB: Also see Issue 10a on catchment erosion and Tables 1 and 2 on improvements to water quality.</i>	i. Continue stocking programme.	Agency Anglers	10 k	●				
	<i>NB: This is subject to external funding after 1997.</i>							
	ii. Carry out habitat improvements as necessary including gravel rehabilitation and trash dam removal.	Agency Riparian owners, anglers	1 k	●	●	●	●	●
	iii. Ensure installation and operation of screens to prevent fish escapement and smolt entrapment at fish farms and other abstraction points.	Abstractors/Fish farmers Agency	< 1 k	●	●			

Issue	Actions	Action By Lead Other	Cost to Agency (£)	Financial Year				
				97	98	99	00	01
8b. Need to develop national strategy for the management of salmon.	i. Develop Salmon Action Plan for the River Axe in line with national guidance.	Agency	5 k	●	●			
8c. Barriers to fish movement in the catchment.	i. Install fish passes, according to regional priority, on: Lexhayne Weir, and Wilmington Weir.	Agency Riparian owners, angling associations	6 k 9 k		●	●		
	ii. Plan for improvements to less significant structures and improve conditions for fish migration where possible using low cost solutions.	Agency Riparian owners, angling associations	< 1 k p.a.	●	●	●		
	iii. Seek to have existing 'Irish Bridges' that restrict fish passage removed or replaced.	Agency, SCC, DCC	< 1 k p.a.	●	●			
8d. Stocking with farmed fish.	i. Discourage stocking of the catchment with farmed fish for angling purposes.	Agency Riparian owners, fishery associations	< 1 k	●	●	●	●	●
	ii. Promote habitat improvements as the preferred means of improving the fishery.	Agency	< 1 k	●	●	●	●	●
8e. Decline in brown trout stocks.	i. Continue current restoration programme including stocking with broodstock from the catchment to provide a regular supply of juveniles.	Agency Fishery associations	10 k	●				
	NB: This is subject to external funding after 1997.							
	ii. Continue programme of habitat improvements including rehabilitating spawning gravels where a need is identified.	Agency	2 k p.a.	●	●	●	●	●
8f. Decline in roach and dace, particularly of larger fish.	i. Investigate status of stocks, including surveys of middle and lower reaches to assess current coarse fish populations.	Agency Fishery associations	2 k	●				
8g. The effect of fish-eating birds on salmonid and coarse fish populations.	i. Co-operate with the licensing authority to progress further research into this issue.	Agency MAFF, landowners, anglers	< 1 k	●				
	ii. Continue to work positively with owners and anglers to establish the full facts in each situation.	Agency Landowners, anglers	< 1 k	●	●	●	●	●

Issue	Actions	Action By Lead Other	Cost to Agency (£)	Financial Year				
				97	98	99	00	01
8h. Damage to spawning/nursery areas due to works in the River Axe not requiring Agency consent.	i. Seek to dissuade riparian owners from carrying out gravel removal or to limit the extent of the operation.	Agency Riparian owners	< 1 k	●	●	●	●	●
	ii. Continue to pursue changes to the legislation to allow increased control of in-river works where damage to the fishery is likely to result.	Agency	< 1 k	●	●	●	●	●
8i. Illegal exploitation of sea trout and salmon in coastal areas.	i. Continue regular coastal patrols in East Devon, enforcing areas closed to netting.	Agency, DSFC	unknown	●	●	●	●	●

Table 9 River Axe Proposed SSSI

The River Axe between Wadbrook and Colyford is to be designated as a Site of Special Scientific Interest (SSSI). It supports particularly interesting plant communities, including the nationally scarce short-leaved water-starwort, and also shows excellent examples of meander formation and other features of geomorphological interest. We will be working closely with English Nature to develop a Conservation Strategy for the SSSI and to produce a consenting protocol, which will clarify for owners and occupiers whom they should contact initially when planning certain activities (see Issue 9a). Consent may still be needed from both English Nature and the Environment Agency.

There are concerns that the middle and lower reaches of the River Axe may be subject to eutrophication. Plant surveys show some decline of diversity; one factor contributing to this decline may be nutrient enrichment taking place, but the results are not conclusive. High levels of orthophosphate have been recorded in the lower River Axe. The STWs and the dairy that discharge to the River Axe contribute to the phosphate load, as do some farming practices in the catchment.

We will be monitoring the river to establish the degree to which nutrient enrichment is occurring in the River Axe and whether its control is required to protect the SSSI.

Issue	Actions	Action By Lead Other	Cost to Agency (£)	Financial Year				
				97	98	99	00	01
9a. Notification of River Axe SSSI.	i. Develop conservation strategy and consenting protocol for SSSI.	EN, Agency	2 k	●				
	ii. Implement conservation strategy.	EN, Agency Riparian/land owners and occupiers	unknown	●	●	●	●	●
	iii. Ensure all authorisations protect value of aquatic plant communities and river geomorphology.	Agency EN	unknown	●	●	●	●	●
	iv. Investigate potential sources of nutrient inputs to the proposed SSSI using plant surveys and nutrient data.	Agency EN	unknown	●	●			
	v. Examine need and feasibility of nutrient control in the catchment and include in the conservation strategy.	Agency EN	unknown	●	●			

Table 10 Catchment Erosion

Erosion is a natural process. Rivers and coastlines change as the forces of water shape the land. We now operate to the presumption that natural river or coastal processes should not be disrupted, except where people or important natural or manmade assets are at risk. Riparian owners have the right at common law to repair their banks and protect land from the effects of erosion as long as this is accomplished without injury to the property of others and does not cause obstruction to flow. However, such works may require consent from us and we will seek to ensure that appropriate methods and material are used as previous works have sometimes had significant detrimental effects on rivers (also see Issue 8h). Sensitive erosion control techniques are illustrated in the 'New Rivers and Wildlife Handbook' (Ref. 14). Where erosion control is necessary we will encourage early control by landowners, using traditional methods and materials where possible, to avoid the need for extensive works later. Where insensitive erosion control has been carried out we will encourage reinstatement and replacement with less damaging options. We will only use public funds to control erosion if the watercourse is 'main river' and if certain criteria are satisfied.

A three year study has been carried out on the River Torridge Catchment to investigate the circumstantial evidence linking changes in agricultural land use to deterioration in both river water quality and salmonid populations. Intensive and non-intensively farmed subcatchments were studied and the study is summarised in 'The Impact of Land Use on Salmonids - A study of the River Torridge Catchment' (Ref. 15). One of the findings of the study was that river bed gravels in the intensively farmed areas contained fine sediment concentrations likely to be damaging to salmonid embryo survival. However, the processes by which sediment is supplied to watercourses are complex and further work is now required to examine sediment sources. A research project has been set up with Exeter University to identify sources and dynamics of sediment in spawning gravel on the River Torridge. We will be looking at the findings of these studies and seeing how they relate to other catchments including the River Axe.

Issue	Actions	Action By Lead Other	Cost to Agency (£)	Financial Year				
				97	98	99	00	01
10a. Catchment erosion.	i. Promote riparian fencing and planting schemes to stabilise banks and reduce silt inputs.	Agency MAFF, NFU, farmers, landowners, West Country Rivers Trust	n/a					
	NB: Cost here is to the riparian owners.							
	ii. Consider relevance of Torridge Research to the Rivers Axe subcatchment.	Agency	< 1 k		●	●		

5. Implementing the Plan: Monitoring and Review

We are jointly responsible, with other identified organisations and individuals, for implementing this Action Plan.

Progress will be monitored on a regular basis and reported annually in a review document that we will distribute to all the key partners and the Catchment Steering Group. This group has been formed by us from those individuals and groups with an interest in the catchment. The Catchment Steering Group represents a range of commercial, Local Authority and environmental interests who support the Consultation Report and Action Plan prior to public release (see Acknowledgements for list of members). They will monitor the implementation of the Action Plan and provide us with specific advice on the importance of issues within the catchment. They act as a link between the local community, ourselves and our committees and will help to promote and develop initiatives of benefit to the environment within the catchment. Copies of the Annual Review will also be available to the public.

Annual Reviews will:

- detail the progress of the work shown in the activity tables;
- identify additional actions required in the light of changes in the catchment.

APPENDIX 1

THE ROLE OF THE ENVIRONMENT AGENCY

Flood Defence has the role of protecting people and the developed environment from flooding by providing effective defences and protection of floodplains. Safeguarding life is our highest priority and to meet this aim we provide a flood forecasting and warning service. Flood Defence also aims to protect and enhance the natural environment by promoting works that are sustainable and work with nature.

The **Water Resource** function comprises the conservation, redistribution and augmentation of surface and groundwater supplies. It includes the powers to encourage water conservation and to promote transfer schemes and to balance the needs of water users and the environment by issuing licences for users to abstract water from rivers and boreholes.

The **Pollution Control** function includes :

- Integrated Pollution Control (IPC) regulating the most polluting, or technologically complex, industrial and other processes in air, on land or in water.
- Water quality and pollution control which prevents and controls pollution and monitors the quality of rivers, estuaries and coastal waters.
- Radioactive Substances regulating the disposal of radioactive material, including that from licensed nuclear sites, and regulating the accumulation, keeping and use of radioactive materials, except from licensed nuclear sites.
- Waste Regulation setting consistent standards for waste management practice to regulate the treatment, storage, movement and disposal of controlled waste. The Agency also has a requirement to register and monitor those who produce waste imposing obligations to re-use, recover or recycle products and materials.
- Reporting on the extent of contaminated land and contributing to its management (primarily undertaken by local authorities).
- Working with abandoned mine operators so that steps can be taken to prevent minewater pollution now and in the future.

The Environment Agency is responsible for maintaining, improving and developing **Fisheries**. This is carried out by licensing, regulation and enforcement schemes which cover salmon, sea trout, non-migratory trout, coarse and eel fisheries. The Agency also carries out improvements to fisheries by improving the habitat, fish stocks and providing advice to fishery owners.

The Agency must also take account of **Recreation** and access. Over 1000 sites in our control are managed for recreational use. We also have a general duty to promote the recreational use of water and land throughout England and Wales. In fulfilling all its functions the Environment Agency is also required to contribute to the **Conservation** of nature, landscape and archaeological heritage. We have a regard to conserving and enhancing flora, fauna, geological or physiographical features when carrying out our pollution control functions, and a duty to further conservation when carrying out our other functions. We also have a duty generally to promote the conservation of flora and fauna dependent on the aquatic environment.

We do not cover all aspects of environmental legislation and service to the general public. Local authorities deal with all noise problems, litter and air pollution arising from vehicles, household areas, small businesses and small industries. Planning permission is also the responsibility of the local authorities who will contact us when necessary. The local authorities also deal with contaminated land issues in liaison with us. Environmental Health issues should also be directed to them.

APPENDIX 2

RESPONSES RECEIVED THROUGH CONSULTATION

National Organisations

Clean Rivers Trust
 English Nature
 English Heritage
 Ministry of Agriculture, Fisheries and Food
 National Farmers Union
 Rural Development Commission
 The Crown Estate
 The Forestry Authority
 The Institution of Civil Engineers

Regional and Local Organisations

Axe Vale Canoe Club
 Axe Vale Rivers Association
 Axe Valley Parish Council
 Axmouth Harbour Management Company Ltd.
 Coles Mill
 Devon Bird Watching and Preservation Society
 Devon Conservation Forum
 Humberts Chartered Surveyors
 Mosterton Post Office and Stores

Local Authorities

Devon County Council
 Dorset County Council
 Seaton Town Council
 Axmouth Parish Council
 Hawkchurch Parish Council
 Membury Parish Council

A further 25 written responses, including questionnaires, were also received from members of the public. Other comments were received at the open day.

APPENDIX 3

GUIDE TO CONSULTATION REPORT AND ACTION PLAN ISSUES

Former Consultation Report Issue	Table Number in this Plan
1. Marginal failure of proposed RQOs at named sites.	Table 1, Issue 1a.
2. Failure to meet long term RQOs.	Table 1, Issue 1c.
3. Need to establish nutrient status of the Axe Estuary.	Table 2, Issue 2a.
4. Significant loads of Annex 1A substances from the River Axe.	Table 2 (text).
5. Nutrient enrichment in the lower River Axe.	Table 2 and Table 9.
6. Low flows in the Umborne Brook.	Table 3, Issue 3b.
7. Forecast deficit in public water supply.	Table 3, Issue 3a.
8. Decline of important habitats and species.	Table 5, Issues 5a, b, c, e, f, g.
9. Little use of catchment by otters.	Table 5, Issue 5i.
10. Scarcity of water voles.	Table 5, Issue 5j.
11. Need for improvement of conservation value of floodplain habitats	Table 5, Issue 5f.
12. Himalayan balsam. Need for improved control of	Table 5, Issue 5d.
13. Need for planned management of aquatic plants in lower River Axe.	Table 5, Issue 5d.
14. Lack of public access to the water environment.	Table 6, Issue 6a.
15. Concrete pill boxes falling in river.	Table 4, Issues 4b and c.
16. Barriers to fish movement in the catchment.	Table 8, Issue 8c.
17. Decline in runs of salmon.	Table 8, Issue 8a.
18. Decline in brown trout stocks.	Table 8, Issue 8e.
19. Removal of gravel from the river by riparian owners.	Table 8, Issue 8h.
20. The effect of fish-eating birds on salmonid and coarse fish populations.	Table 8, Issue 8g.
21. Stocking with farmed fish.	Table 8, Issue 8d.
22. Decline in roach and dace particularly of larger fish.	Table 8, Issue 8g.
23. Proposals for coastal defence works need to be considered within an overall and integrated strategy.	Table 7, text.
24. Need to identify flood risk for planning authorities.	Table 7, Issue 7b.
25. Inappropriate development, particularly in floodplains, may affect standards of flood defence and damage environmental interest.	Table 7 (text).
26. Need to continue to improve the efficiency and effectiveness of our flood defence work.	Table 7 (text).
27. Inappropriate bank erosion control methods.	Table 10, Issue 10a.
28. Need to improve flood warning at some locations.	Table 7, Issue 7a.
New Issues	Table Number
Lack of archaeological information in a useable format.	Table 4, Issue 4a.
Concern over loss of amenity at Middle Mill Weir.	Table 4, Issue 4d.
Lack of public awareness of the high value and threats to marine habitats.	Table 5, Issue 5h.
Loss of nesting sites for riparian birds.	Table 5, Issue 5k.
Loss of earth science features (e.g. rock exposures and floodplain forming processes).	Table 5, Issue 5l.
Need to develop national strategy for the management of salmon.	Table 8, Issue 8b.
Illegal exploitation of sea trout and salmon in coastal areas.	Table 8, Issue 8i.
Notification of River Axe SSSI.	Table 9, Issue 9a.

APPENDIX 4

RIVER QUALITY OBJECTIVES

The Environment Agency has set water quality targets for all rivers. These targets are known as **River Quality Objectives (RQOs)**, introduced in May 1994, and are used for planning the maintenance and improvement of river quality. RQOs establish a defined level of protection for aquatic life. Achieving these will help to sustain the use of rivers for recreation, fisheries and wildlife, and protect the interests of abstractors. RQOs provide a basis for setting consents to discharge effluent into rivers, and guide decisions on the Agency's other actions to control and prevent pollution. The water quality classification scheme used to set RQO planning targets is known as the River Ecosystem scheme. The **River Ecosystem** scheme replaces the **National Water Council (NWC)** scheme, which was first introduced in the late 1970s.

The River Ecosystem Scheme

The River Ecosystem scheme provides a nationally consistent basis for setting RQOs. The scheme comprises five classes which reflect the chemical quality requirements for communities of plants and animals in our rivers. The standards defining these classes reflect differing degrees of pollution by organic matter and other common pollutants.

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 which is likely to limit coarse fish population.

The River Ecosystem scheme takes forward the core standards from the old NWC scheme, but also incorporates new standards and firm rules on how the scheme should be applied. These are described in detail in the document *Water Quality Objectives: Procedures used by the National Rivers Authority for the purpose of the Surface Waters (River Ecosystem) (Classification) Regulations 1994*, available from the Water Quality Planning departments at our Regional Office in Exeter. Current and long term River Quality Objectives for stretches of the Rivers Lim and Axe are shown in Table A4.

Table A4: Current and Long Term RQOs for the Rivers Axe and Lim and their tributaries.

Watercourse	Stretch	Current RQO	Long term RQO
River Lim	Source - Lyme Regis (mean high water)	1	-
River Axe	A3066 Bridge Mosterton - Seaborough	2 (2000) ¹	-
	Seaborough - Oathill Farm Wayford	2	1 *
	Oathill Farm Wayford - A358 Bridge Weycroft	2	1 *
	A358 Bridge Weycroft - Bow Bridge	2	1 *
	Bow Bridge - Slymlakes	2	-
	Slymlakes - Whitford Bridge	2	-
	Whitford Bridge - d/s Whitford	2	-
	d/s Whitford - Normal tidal limit	2 (1998) ¹	-
River Coly	Source - Heathayne Farm	2 (2000) ¹	-
	Heathayne Farm - Normal tidal limit	2 (2000) ¹	-
Umborne Brook	Source - Triffords Farm	2	1 *
	Triffords Farm - Coly confluence	2 (2000) ¹	-
Offwell Brook	Source - Offwell	1	-
	Offwell - Coly confluence	2	-
Bruckland Stream	Source - Axe confluence	2 (2000) ¹	-
Yarty	Source - Newhaven Bridge	2	1
	Newhaven Bridge - Beckford Bridge	1	-
	Beckford Bridge - Axe confluence	2	1 *
Corry Brook	Rose Farm - Yarty confluence	2	-
Kit Brook	Source - Axe confluence	1	-
Blackwater River	Source - Axe confluence	2	1
Forton Brook	Source - u/s Tatworth Bridge	1	-
	u/s Tatworth Bridge - Axe confluence	2	-
Temple Brook	Source - Axe confluence	2 (1998) ¹	-
Clapton Stream	Source - Axe confluence	3	2
Drimpton Stream	Source - Axe confluence	2 (1998) ¹	1 *
Whetley Stream	Source - Axe confluence	2	-
Branscombe Stream	Source - Mean high water	2	-

¹ Compliance date.

* Water quality fails to comply with long term RQOs (see Table 1).

GLOSSARY

ABSTRACTION

Removal of water from surface or groundwater.

ALIEN

Plant or animal not native to the country concerned.

AQUATIC PLANTS

A term given to plants that grow entirely covered by water, like water-milfoil, or at the surface, such as yellow water-lily. Some plants have both aquatic and emergent forms.

AQUIFER

Layer of porous rock able to hold or transmit water.

BIODIVERSITY

The variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems (Article II of the Biodiversity Convention).

CARR

Wet woodland composed of trees such as willow and alder.

CATCHMENT

The total area from which a single river collects surface runoff.

COARSE FISH

This is a lay-man's term for cyprinid fish and other commonly associated species such as pike, perch and eels of angling significance. The term does not normally refer to minor species such as bullhead, stone loach, minnow and stickleback.

COASTAL FLUSH

Small isolated wetland fed by groundwater, e.g. wetland around a spring.

COMBINED SEWER OVERFLOW (CSO)

An overflow structure which permits a discharge from the sewerage system during wet weather.

CONFLUENCE

The point at which two rivers meet.

CONSENT (DISCHARGE)

A statutory document issued by the Environment Agency under Schedule 10 of the Water Resources Act 1991 as amended by the Environment Act 1995 to indicate any limits and conditions on the discharge of an effluent to a controlled water.

COUNTRYSIDE STEWARDSHIP SCHEME

An initiative run by MAFF to enhance and conserve farming landscapes, wildlife habitats and cultural heritage.

COUNTY WILDLIFE SITES

Sites which are of county significance for wildlife.

CULM GRASSLAND

A habitat which comprises a characteristic mixture of marshy grassland, bog, wet heath and scrubby woodland which collectively supports a wide range of flora and fauna. The habitat is underlain by a geological formation of sandstones and shales.

ECOSYSTEM

A functioning, interacting system composed of one or more living organisms and their effective environment, in a biological, chemical and physical sense.

ENVIRONMENTAL QUALITY STANDARD (EQS)

The concentration of a substance found in a body of water which should not be exceeded in order to protect the environment or human health. An EQS is set by the EC through EC Directives and also by the government.

ENVIRONMENTALLY SENSITIVE AREA (ESA)

An area designated by MAFF where grant aid is available to support traditional farming methods.

EUTROPHIC

Water enriched with nutrients which result in high plant (including algal) growth. Usually used when referring to enrichment from man-made sources such as fertilisers leaching from the soil.

FLOODPLAIN

Parts of river valleys or coastal plains which are inundated during floods. It includes areas protected by flood defences.

FLUVIAL

Pertaining to, or found in rivers.

GEOMORPHOLOGY

Scientific study of land forms and of the processes that formed them.

GROUNDWATER

All the water contained in the void spaces in pervious rocks and that held within the soil.

HABITAT

Natural home of plant or animal.

HYDROGEOLOGY

Branch of geology concerned with water within the Earth's crust.

LANDFILL SITE

Site used for waste disposal into/onto land.

MAIN RIVER

Designated under the Water Resources Act 1991 by the Ministry of Agriculture, Fisheries and Food. Formal consent is required for all activities that interfere with the bed or banks of the river or obstruct the flow.

OXBOW

Small lake formed in former river bed, when a bend in a meandering river is cut off from the main stream.

RIPARIAN OWNER

Owner of river bank and/or land adjacent to a river. Normally owns river bed and rights to midline of channel.

RUNOFF

Water leaving a river catchment. Normally regarded as rainfall minus evapotranspiration (evaporation and loss of water by plants) but commonly used to mean rainwater flowing across the land (also known as overland flow).

SALMONID

Game fish of the salmon family e.g. salmon, trout and sea trout.

SECTION 105 SURVEYS

Section 105 of the Water Resources Act 1991 allows for Standards of Service Assets and Flood Risk Surveys.

SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI)

Sites of national importance designated under the Wildlife and Countryside Act 1981 by English Nature in England. Sites may be designated to protect wildlife, geology or land forms.

SPECIAL AREA OF CONSERVATION (SAC) AND SPECIAL PROTECTION AREA (SPA)

Areas designated under EC Directives.

SPRING FISH

Adult salmon which return to freshwater, mostly in late winter/early spring, after two or more winters at sea.

SURFACE WATER

General term used to describe all the water features such as rivers, streams, springs, ponds and lakes.

WETLANDS

Areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt including areas of marine water, the depth of which at low tides does not exceed 6 m.

UNITS

mm	millimetre
m	metre
km	kilometre
km ²	kilometre squared
ha	hectare
l	litre
MI	megalitre
%	percentage
>	greater than
<	less than
k	thousand
p.a.	per annum

ABBREVIATIONS

Agency	Environment Agency
AONB	Area of Outstanding Natural Beauty
AVCS	Axe Vale Conservation Society
BAP	Biodiversity Action Plan
BTCV	British Trust of Conservation Volunteers
CMP	Catchment Management Plan
CoCo	Countryside Commission
DAS	Devon Archaeological Society
DBWPS	Devon Bird Watching & Preservation Society
DCC	Devon County Council
DoE	Department of the Environment
DSFAC	Devon Sea Fisheries Advisory Committee
DWT	Devon Wildlife Trust
EC	European Commission
EDDC	East Devon District Council
EDHCS	East Devon Heritage Coast Service
EN	English Nature
ESA	Environmentally Sensitive Area
HMIP	Her Majesty's Inspectorate of Pollution
HMSO	Her Majesty's Stationery Office
IPC	Integrated Pollution Control
JAC	Joint Advisory Committee
LA	Local Authority
LEAP	Local Environment Agency Plan
MAFF	Ministry of Agriculture, Fisheries and Food
NFU	National Farmers Union
NRA	National Rivers Authority
NT	National Trust
NWC	National Water Council
PCC	Plymouth City Council
RE	River Ecosystem, RE1, RE2 etc
R&W	Rivers and Wetlands
RHIER	Royal Holloway Institute of Environmental Research
RIGS	Regionally Important Geological Site
RQO	River Quality Objective
RSPB	Royal Society for the Protection of Birds
SCC	Somerset County Council
SSSI	Sites of Special Scientific Interest
STW	Sewage Treatment Works
SWWSL	South West Water Services Limited
UK	United Kingdom
WRA	Waste Regulation Authority
WWSL	Wessex Water Services Limited

REFERENCES

1. Water Resources Act, 1991, HMSO, ISBN 0-10-5457-91-4.
2. Rivers Axe and Lim Catchment Management Plan Consultation Report, NRA South Western Region, March 1996, SW-3/96-0.8k-E-ASRN.
3. European Council Directive of 21 May 1991 Concerning Urban Wastewater Treatment (91/271/EEC). Official Journal of the European Communities No. L 135.
4. Tomorrow's Water, Water Resources Development Strategy, NRA South Western Region, April 1995, W- 4/95-1k-B-ANOQ.
5. Biodiversity Challenge: An Agenda for Conservation in the UK, Wyne G et al, RSPB 1993.
6. Biodiversity: The UK Action Plan 1994, HMSO.
7. Biodiversity Challenge: An Agenda for Conservation in the UK (second edition), Wyne G et al, RSPB 1995.
8. Biodiversity: The UK Steering Group Report 1995, Volume 1: Meeting the Rio Challenge, HMSO.
9. Biodiversity: The UK Steering Group Report 1995, Volume 2: Action Plans, HMSO.
10. Government Response to the UK Steering Group Report on Biodiversity 1996, HMSO.
11. Biodiversity Action Plan for Devon's Rivers and Wetlands, Consultation Document, Devon Wildlife Trust, June 1996.
12. European Council Directive on Species and Habitats (92/409/EEC). Official Journal of the European Communities No. L222.
13. A Strategy for the Management of Salmon in England and Wales, NRA, 1996.
14. New Rivers and Wildlife Handbook, RSPB, 1994, ISBN 0903138700.
15. Impact of Land Use on Salmonids - A Study of the River Torridge Catchment, Naismith, Wyatt, Gulson, HMSO 1996.

MANAGEMENT AND CONTACTS:

The Environment Agency delivers a service to its customers, with the emphasis on authority and accountability at the most local level possible. It aims to be cost-effective and efficient and to offer the best service and value for money.

Head Office is responsible for overall policy and relationships with national bodies including Government.

Rio House, Waterside Drive, Aztec West, Almondsbury, Bristol BS12 4UD
Tel: 01454 624 400 Fax: 01454 624 409

ENVIRONMENT AGENCY REGIONAL OFFICES

ANGLIAN

Kingfisher House
Goldhay Way
Orton Goldhay
Peterborough PE2 5ZR
Tel: 01733 371 811
Fax: 01733 231 840

SOUTHERN

Guildbourne House
Chatsworth Road
Worthing
West Sussex BN11 1LD
Tel: 01903 832 000
Fax: 01903 821 832

NORTH EAST

Rivers House
21 Park Square South
Leeds LS1 2QG
Tel: 0113 244 0191
Fax: 0113 246 1889

SOUTH WEST

Manley House
Kestrel Way
Exeter EX2 7LQ
Tel: 01392 444 000
Fax: 01392 444 238

NORTH WEST

Richard Fairclough House
Knutsford Road
Warrington WA4 1HG
Tel: 01925 653 999
Fax: 01925 415 961

THAMES

Kings Meadow House
Kings Meadow Road
Reading RG1 8DQ
Tel: 0118 953 5000
Fax: 0118 950 0388

MIDLANDS

Sapphire East
550 Streetsbrook Road
Solihull B91 1QT
Tel: 0121 711 2324
Fax: 0121 711 5824

WELSH

Rivers House/Plas-yr-Afon
St Mellons Business Park
St Mellons
Cardiff CF3 0LT
Tel: 01222 770 088
Fax: 01222 798 555



For general enquiries please call your local Environment Agency office. If you are unsure who to contact, or which is your local office, please call our general enquiry line.

ENVIRONMENT AGENCY GENERAL ENQUIRY LINE

0645 333 111

The 24-hour emergency hotline number for reporting all environmental incidents relating to air, land and water.

ENVIRONMENT AGENCY EMERGENCY HOTLINE

0800 80 70 60



**ENVIRONMENT
AGENCY**

Devon Area
Manley House
Kestrel Way
Exeter EX2 7LQ