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Tony Newman  
Reg. Water Resources.

Photo  
Mounts

# local environment agency plan

## NORTH DEVON STREAMS

ACTION PLAN

AUGUST 1997



ENVIRONMENT  
AGENCY

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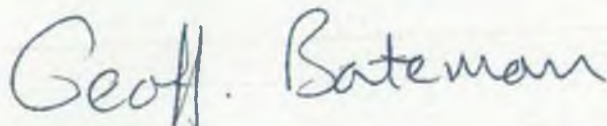
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## Foreword

The integrated management of the environment is a fundamental philosophy for the Environment Agency with Local Environment Agency Plans (LEAPs) taking a key role in this approach.

The North Devon Streams Catchment covers an area of outstanding natural beauty with much unspoilt and nationally scarce habitat. It is vital that these important assets are maintained and protected both now and for future generations to enjoy. This area is an important tourism and recreation centre for Devon because of its scenic and generally undeveloped nature. It is vital that the needs of all uses of the area, including flora and fauna, are balanced to ensure continued protection of these precious assets. This Plan epitomises the Agency's commitment to protect and where necessary enhance the environment through the Agency's own actions or in partnership with other organisations.

We are very grateful for the contributions made during the consultation period and are convinced that they represent the spirit of partnership that will be required to implement the plan.



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ENVIRONMENT AGENCY



125097



Map 1 - The North Devon Streams Catchment



Information correct as of June 1997

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# map 1

Fold out for Map 1  
The North Devon Streams Catchment

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## Catchment Vision

Our vision of the North Devon Streams Catchment is of a healthy and diverse environment, managed in an environmentally sustainable way, balancing the needs of all those who live, work and visit the area.

In an area of such outstanding natural beauty and ecological value, our Plans will help to ensure that:

- discharges to the air, land and water do not harm the environment
- the abundance and diversity of wildlife and habitats in the catchment is maintained and where appropriate restored or enhanced
- there is maintenance of the natural hydrological cycle, including natural river and wetland functions and processes
- water is a valued resource and is used accordingly
- there is minimal risk to people and property from flooding
- waste generation is minimised and the quantity of waste requiring disposal is reduced through the principles of reuse and recovery
- features of archaeological and historic interest are conserved
- people's enjoyment and appreciation of the environment continues to grow.

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 has been formed by 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.

Sustainable development is defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland Report, 1987).

### 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 and 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 six main functions:

- Flood Defence
- Water Resources
- Pollution Control
- Fisheries
- Recreation
- Conservation

These roles are explained in further detail in Appendix 1.

## 1.2 The Environment Planning Process

Local Environment Agency Plans (LEAPs) assist the Agency to achieve its objectives. LEAPs are based upon river catchments, or where there are a number of small catchments these are combined into one planning unit. A river catchment includes a river with all its tributaries, groundwater, and the land that drains to it. The plans consider all elements of the environment which the Environment Agency has a role in regulating or can influence through its statutory powers or duties. These plans assist in planning the Agencies future activities, and the activities of those bodies, groups or individuals the Agency must work with in order to achieve its objectives. The plans aim to integrate and co-ordinate these activities. They are part of an ongoing dialogue between ourselves and the various organisations involved in the protection and management of the environment.

The LEAP process includes the production of two documents, a Consultation Report and an Action Plan. The Consultation Report describes the environmental resources of the area and identifies issues where we, or others, need to take action to address problems in the environment. The report gives others the opportunity to comment on these problems, the actions proposed to tackle these problems and raise any issue not covered in the report. Following consultation, the Action Plan identifies actions to deal with the issues.

This Action Plan covers the five year period from 1997 to April 2001. Our progress with the Action Plan will be reported in Annual Reviews.

### Local Environment Agency Plans and Development Plans

We can control some of the factors influencing the quality of the environment, but we have limited control over the way that land is developed. This is the responsibility of local planning authorities.

Local authorities prepare statutory development plans. The policies in these plans will guide the way that land is developed in the future. We provide advice and guidance to local planning authorities and work with them to develop and adopt policies which minimise the impact of any development upon the environment. We will reinforce these policies, where we can, when commenting on planning matters or making our own decisions. LEAPs are one way we aim to influence the content of Local Authority plans.

### Local Environment Agency Plans and Catchment Management Plans

This LEAP slots into a sequence of plans which were being prepared by the former National Rivers Authority (NRA) to cover all river catchments in England and Wales by the end of 1998. LEAPs are used to cover the same topics as Catchment Management Plans but they also deal with new topics to cover the full range of our responsibilities.

**Local Environment Agency Plans and the Catchment Steering Group**

This steering group represents a range of commercial, local authority and environmental interests who comment upon the Consultation Report and Action Plan prior to public release. 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 communication link between ourselves, our committees (including the Area Environment Group) and the local community, and will help to promote and develop initiatives of benefit to the environment within the catchment. The steering group are:

<i>Name</i>	<i>Representing</i>
Mr D Edgcombe	North Devon Heritage Coast
Mrs M Ford	Riparian Owners
Mr M Williams	South West Water Services Ltd
Mr D Lloyd	Exmoor National Park
Mr J Mann	Shellfishing & North Devon District Council
Mr G Manning	Regional Flood Defence Committee
Mr S Mulberry	National Trust
Mr J Pedder	Fishing Associations & Lynton/Lynmouth Town Council
Mr J Roberts	Tourism and Recreation
Dr F Ulf-Hansen	Conservation (English Nature)
Mr M Zeale	Local Farmers

## 2. Review of the Consultation Process

The issues listed in this Action Plan were either identified in the Consultation Report or resulted from the Consultation Process (see Appendix 2). The Consultation Report was launched in October 1996 and the consultation period concluded on 31 January 1997. Responses were received from 37 organisations and individuals; these were collated and summarised in our Summary of Consultation Responses (available on request).

In general consultees were very supportive of the plan and welcomed the opportunity to comment on environmental issues. The most commented upon issues were; loss of conservation value of the catchment, pollution in watercourses and fly tipping. Many of the organisations who responded identified specific areas where they could work in partnership with the Agency to help resolve some of the issues.

## 3. The Catchment Area

### 3.1 General Description

This plan covers an area of North Devon approximately 225 km<sup>2</sup>, and includes the catchments of those streams which discharge to a 56 km stretch of coast between Saunton Down and Foreland Point (see Map 1). For the purposes of this plan the West and East Lyn Rivers are referred to jointly as 'the River Lyn' where appropriate.

Less than 2% of the catchment is classified as urban; principle settlements include Ilfracombe, Woolacombe, Combe Martin, Lynton, Lynmouth, Croyde and Berrynarbour. The main industries are tourism and farming, and all the major settlements cater for many visitors during the summer months.

A large part of the catchment lies within Exmoor National Park; this area is also designated an Environmentally Sensitive Area. Virtually all of the remaining rural area is included in the North Devon Area of Outstanding Natural Beauty (AONB). The North Devon and Exmoor Heritage Coasts include all the undeveloped coastline, in recognition of their national value.

### 3.2 Review of Resources, Uses and Activities

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

#### Landscape and Archaeology

Exmoor National Park and the North Devon AONB are recognised as being of national importance for their landscape. Much of the coast is part of the North Devon and Exmoor Heritage Coasts, a designation given to undeveloped coastline of outstanding scenic value.

In the east, watercourses drop sharply from Exmoor through steep sided, largely treeless valleys. Once away from the open moorland the valleys become incised features with heavily wooded slopes with occasional small fields alongside. These enclosed valleys run right to the sea; villages sit isolated within them, linked by narrow, winding roads.

Whilst Exmoor may seem wild and unmanaged, it is more modified than Dartmoor. The underlying geology has not encouraged the formation of extensive peat bogs, as found on Dartmoor, making it slightly easier to farm.

Most of the coast is dominated by high cliffs, which plunge from the maritime heaths at the edge of the rolling plateau to a rocky and wave lashed shore.

In the west, the landscape becomes gradually softer and the land use more influenced by human activity. The west facing section of the coast includes the only extensive area of soft shoreline; sand dune systems rise from wide sandy beaches merging to rolling pastures behind. Harder rocks have resulted in the raised beaches of Baggy Point and Morte Point.

The catchment includes many sites and features of historic and archaeological interest; fifty seven of these have been designated as Scheduled Ancient Monuments. In addition, nine Built Conservation Areas have been declared.

#### Planning Administration

The greater part of the catchment lies within North Devon District Council's (NDDC) boundaries, with a small region to the east administered by West Somerset District Council (WSDC). Much of the catchment also lies within Exmoor National Park, a Local Planning Authority. Two local plans are relevant to the catchment: the North Devon Local Deposit Plan<sup>1</sup> and the Exmoor National Park Local Deposit Plan<sup>2</sup>.

#### Waste Management

There are eight waste disposal sites in the North Devon Streams Catchment, of which only two, the civic amenity sites at Ilfracombe and Lynton, are currently in use.

Land spreading of waste, including sewage sludge from South West Water Services Limited (SWWSL) sewage treatment works (STWs), and private septic tanks together with industrial wastes such as whey, milk washings and cider making waste, also takes place in the catchment. We hold maps identifying the locations where this disposal is carried out.

#### Discharges to the Aquatic Environment

The most significant discharges within the catchment are coastal sewage discharges, the main ones being Lynton/Lynmouth, Combe Martin, Ilfracombe, Croyde and Woolacombe. Improvement schemes have been or are being put in place at the first four sites. Woolacombe is served by an existing biological STW.

The largest inland STW is at Parracombe; this works has been improved by SWWSL. A new biological STW is also to be constructed by SWWSL at Henstridge on the River UMBER to improve an unsatisfactory discharge. In addition there are a significant number of small private discharges in the catchment.

#### Rural Land Use

A large area of the catchment is agricultural. Most of the agricultural land is grassland for livestock farming, the remainder being mainly arable and farm woodland. Many holdings are farmed on a part time basis.

#### Recreation and Amenity

This area is a major tourist destination, with many hotels and camping or caravan sites. Freshwater canoeing takes place on the River Lyn on a strictly controlled basis, while surf canoeing takes place at Woolacombe, Croyde and Lynmouth. There are a number of extensively used bathing beaches within the catchment, and surfing and windsurfing takes place at several of these locations. There are also opportunities for rock climbing, yachting, snorkelling and scuba diving.

The South West Coast Path runs along the whole of the coast, attracting both long and short distance walkers. The Tarka Trail follows the same route over much of its length, before turning inland at Lynmouth to follow the Two Moors

Way, another long distance footpath linking Exmoor and Dartmoor. In addition, several riverside footpaths exist, some of which are managed as nature trails.

### **Flood Defence**

There is one major flood defence scheme in the North Devon Streams Catchment, on the River Lyn at Lynmouth. There is a small scheme on the River Heddon at Parracombe and a sea defence scheme at Ilfracombe.

### **Water Abstraction and Supply**

Abstractions for public water supply are restricted to two surface water sources in the catchment, the West Wilder Brook and the Barbrook. Water is abstracted from both surface and groundwater sources for private use such as the supply of water for holiday accommodation, agricultural purposes, hydropower, fish farming, industrial uses and amenity purposes.

### **Fisheries**

The River Lyn and its tributaries support a population of predominantly salmonid species. Brown trout are common and salmon and sea trout are found where access permits. There is an active rod fishery for all salmonid species, much of which is managed by us. A licensed tidal fish trap, operates at the mouth of the river on a seasonal basis taking salmon, sea trout, and occasionally, sea fish. The quality of the migratory fishery is limited to a certain extent by the amount of suitable spawning habitat available.

The River Heddon and other streams to the west all support stocks of brown trout which are fished mainly by local anglers. Most of these watercourses have restricted access to the sea, and would normally be passable only when high spring tides coincide with spate conditions. The limited survey data we have shows no evidence that salmon or sea trout are currently found in any numbers in these watercourses.

Natural coarse fish stocks in the North Devon Streams Catchment are extremely limited as conditions are generally not well suited to their production. There are, however, a number of privately owned stillwaters which are stocked with coarse fish and which form recreational fisheries. Eels are found throughout the catchment but generally in low numbers.

### **Conservation of the Natural Environment**

The catchment is home to many species and habitats of both national and international importance. Species include Otters and Atlantic Salmon and habitats include valley mire and blanket bog (a full list is given in section 4.7). There are numerous statutory and non-statutory wildlife designations in the catchment. These include eleven Sites of Special Scientific Interest in the catchment, designations have been made for both flora and fauna and for geological features.

## 4. Activity Tables

The following tables outline the actions needed to address the issues we identified in the Consultation Report; they also include some additional issues raised during the consultation process.

Several changes to the issues raised in the Consultation Report have been made as a result of the comments received; issues have been renumbered and existing issues modified (see Appendix 2).

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 initial '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 April 1998.
- Please refer to the abbreviations section at the end of the report for the definition of acronyms and abbreviations.

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 participating organisations have limited resources and powers; some work may take longer than indicated owing to funding availability, government policy or more urgent priorities.
- should more issues become apparent during the life of this plan, further actions will be added at succeeding Annual Reviews.

### 4.1 Waste Management

The DoE's white paper on waste, 'Making Waste Work', sets out the government's policy framework for the management of waste. It identifies ways in which waste can be managed in a more sustainable way, and sets out targets for achieving that aim.

The strategy is mainly concerned with controlled waste, which consists of household, industrial and commercial waste, as defined by the Environmental Protection Act 1990'. The principles it sets out, however, also apply to non-controlled wastes such as that from farms, mines and quarries.

By far the greatest proportion of controlled waste is currently sent to landfill, and a target has been set to reduce this. The main reason for initiating this move away from the use of landfills is that they have a large pollution potential. Landfill can release chemicals to surface and underground water and to the soil,

they also generate significant quantities of methane which is a 'greenhouse gas'. Modern landfill sites are engineered to a high specification, their operation is governed by strict licence conditions and they are monitored for signs of pollution both during and after operation. Older landfill sites were not managed to the same degree and present a greater risk of pollution.

There has been some pollution of a watercourse caused by drainage from the disused landfill site at Killacleave. Remedial measures have reduced the pollution. This site is believed to be the responsibility of Devon County Council (DCC); discussions have still to be held between the Agency and DCC to confirm their responsibility for monitoring the site.

The waste disposal licence for the former domestic landfill site at Lyn Down is still current. Monitoring points will be installed at this site according to the requirements of the licence, and monitoring will then be the responsibility of the DCC (as the Waste Disposal Authority). A plan for remediation of this site has been submitted by the DCC, however, the Agency is negotiating for a number of improvements to the plan.

The former landfill site at Leigh Quarry is no longer licensed but is the responsibility of the WDA. A plan for remediation has also been submitted at this site and the Agency is negotiating for a number of improvements to the plan. The plan will include monitoring and this will be the responsibility of the WDA.

Uncontrolled and illegal tipping of waste, known as 'fly tipping', can pose hazards to wildlife, may attract vermin and can cause pollution as well as ruining the appearance of an area. Following the introduction of the landfill tax on 1st October 1996 much media attention has been focused on fly tipping and the identification of problem sites. We have received significantly more complaints regarding fly tipping in 1997, and we are conducting investigations where appropriate. Cuts to Devon County Council's budgets have meant the closure of local civic amenity sites on certain days. This has exacerbated the problem; often fly tipping occurs outside the gates to these sites when they are closed.

Table 1 Waste Management

Issue	Actions	Action By Lead Other	Cost to Agency (£)	Financial Year				
				97	98	99	00	01
1a Pollution potential of disused landfill sites at Killacleave, Lyn Down and Leigh Quarry.	Establish responsibility for monitoring of Killacleave; ensure remedial measures continue to be effective.	Agency, DCC	<1 k	●				
	Negotiate with the licence holders to produce effective plans for remediation at Lyn Down and Leigh Quarry.	Agency, DCC	1 k	●	●			
	Install monitoring boreholes and quality assure DCC's results.	Agency, DCC	5 k		●	●	●	●
1b Uncontrolled and illegal tipping of waste.	Improve waste management facilities in the area.	DCC, NDDC, Agency	5 k	●	●	●	●	●
	Publicise the problem to discourage illegal tipping and to encourage the public to report illegal waste tipping.	Agency	5 k p.a.	●	●	●	●	●



## 4.2 Contaminated Land

The Environment Act 1995<sup>3</sup> contains new provisions for dealing with contaminated land; local authorities are the key regulators under the Act with the Agency acting as a consultee and advisor. The precise nature of contaminated land in the catchment is not fully known. New statutory guidance (which may be revised by the new Government) will require local authorities to identify contaminated land within their area. Once sites have been identified, it will be necessary to decide what remedial work is required. Any further issues and actions resulting from the identification of contaminated land sites in the catchment will be reported in the Annual Reviews.

Table 2 Contaminated Land

Issue	Actions	Action By Lead Other	Cost to Agency (£)	Financial Year				
				97	98	99	00	01
2a Lack of information on status of contaminated land in catchment.	Identify any contaminated land sites in the catchment.	NDDC, WSDC, Agency	unknown		●	●		

## 4.3 Farming

Over the last ten years farmers have made great improvements in farm waste storage facilities and disposal methods. This has resulted in a significant reduction in the number of point source pollution incidents attributed to dairy and beef cattle farms and contributed to an overall improvement in water quality in the catchment. However, work still needs to be done to solve the problem of diffuse pollution, for example, from runoff from waste spread to land.

The spreading of controlled waste on agricultural land is increasingly used as a way to improve the condition of the land as well as a method of disposing of waste. The application of sewage sludge to agricultural land is regulated throughout the EC by Council Directive 86/278 which is enforced in the UK by the Sludge (Use in Agriculture) Regulations 1989. We monitor land-spreading activities to ensure fields are not overloaded with waste, or spread during inappropriate weather conditions or in locations where there would be a risk of polluting water or damaging land of conservation value. We also audit sludge spreading records kept by water companies. We are currently working with DoE, MAFF, ADAS Consultancy Limited and WRC to draw up a similar code of practice for the application of industrial wastes.

Other types of farm waste also have the potential to cause pollution, for example, pesticides and fertilisers. Concern has been raised over the methods available for disposal of plastic bags and wrappings used on farms. These can be blown across fields, becoming trapped in trees and hedges. They can be a threat to wildlife as well as looking unsightly. The Farm Films Recovery Service operated a limited plastics collection service, however this service folded earlier this year. We will work with others to see if alternative arrangements can be made for farm plastic recycling.

There are concerns that in some parts of the catchment, particularly on areas of Exmoor, that dead livestock in or near watercourses may be causing pollution and a hazard to public health. The scale of the problem is unknown but in the area around Brendon a significant number of sheep carcasses have been recorded in or near to water. We will investigate the scale of this problem and where necessary raise awareness amongst the farming community and encourage the reporting of such incidents. When carcasses are reported the first

responsibility for removal of the carcass lies with the land or stock owner. It is an offence to permit 'any solid waste matter to enter controlled waters'<sup>4</sup> and to 'deposit on land any waste likely to give rise to an environmental hazard'<sup>5</sup>. In the event that the land or stock owner cannot be traced the Agency or District Council may remove the carcass, seeking to recover costs from the owner later.

Table 3 Farming

Issue	Actions	Action By Lead Other	Cost to Agency (£)	Financial Year				
				97	98	99	00	01
3a Risk of pollution from land-spreading.	Ensure that land-spreaders follow guidance available so that pollution risks are minimised.	Agency, NFU	<1 k	●	●	●	●	●
	Develop guidance for land-spreading of industrial waste.	Agency, DoE, MAFF, ADAS, WRc	4 k	●	●			
3b Risk of pollution from farm waste.	Raise awareness of the problem and availability of advice amongst the farming community.	Agency, NFU	<1 k p.a.	●	●			
	Facilitate recycling of farm plastics.	Agency, NFU	unknown	●	●	●	●	●
3c Risk of pollution from dead livestock in or near watercourses.	Identify particular problem sites.	Agency, Riparian Interests, Anglers	<1 k	●				
	Raise awareness of the problem and encourage reporting of incidents.	Agency	<1 k	●	●			

#### 4.4 Water Quality

We manage water quality by setting targets called River Quality Objectives (RQOs). They are intended to protect current water quality and future use, and we use them as a basis for setting consents for new discharges and planning future water quality improvements. In the Consultation Report we proposed RQOs for the whole catchment. Following the consultation process, these targets have now been finalised (see Map 2).

River quality in a stretch of the Croyde Stream from Crowborough to Forda, and in the Woolacombe Stream did not meet their RQOs in 1995 because of elevated biological oxygen demand (BOD) concentrations. Investigations into the cause of these non-compliances were carried out by the Agency at the beginning of the year. A number of potential problems have been identified but the actual cause of the failures are still unknown.

The water quality assessment in the LEAP Consultation Report was based on 3 years data between 1993 and 1995. We have now updated the assessment based on the period 1994 to 1996 and have found that the water quality of a further three stretches has changed.

Non-compliance's with RQOs continue in the Croyde Stream (from Crowborough to Forda), and in the Woolacombe Stream. New non-compliances occurred in the West Wilder Brook, River Heddon and a stretch of the Croyde Stream from Forda to Croyde. Failures in all cases were due to elevated BOD concentrations.

Following these failures we propose carrying out further investigation work on these watercourses.

We also manage water quality by applying standards set in EC Directives and other international commitments.

The EC Bathing Waters Directive concerning the quality of bathing water (76/160/EEC) seeks to protect public health and the amenity of popular bathing waters by reducing pollution. The Directive contains standards for nineteen microbiological, physical and chemical parameters to assess bathing water quality. Compliance is assessed mainly by testing against standards for faecal indicator bacteria.

During the period 1986 to 1995 Ilfracombe Hele and Capstone bathing waters failed to comply with the Directive in a number of years. The main causes of failure were bacterial contamination from the Wilder Brook, Hele Stream and crude sewage discharges. South West Water Services Ltd (SWWSL) have constructed a new sewage treatment works for the Ilfracombe area as part of the company's 'Clean Sweep' program. The Agency have issued a consent for Ilfracombe STW with a requirement for ultra-violet (UV) disinfection. The UV treatment has not yet been installed. An investigation carried out by the Agency identified a number of potential problems on the Wilder Brook and Hele Stream. These investigations have resulted in improvements in several areas and further investigation work is planned during the summer of 1997.

The bathing waters at Combe Martin also failed to comply with the Directive in a number of years. Two main causes were identified; the discharge of crude sewage off Lester Point and bacterial contamination from the River Umber. SWWSL completed a scheme in 1996 to provide secondary treatment for the discharge and to improve the sewer. The Agency carried out investigations in 1996 and 1997 to identify sources of bacterial contamination to the River Umber which may contribute to bathing water non-compliance. A number of problems were identified in the lower section of the river running through Combe Martin, and in the Furzepath Stream. We will continue to address these problems.

The bathing waters at Lynmouth failed to comply with the Directive in all years in the period 1986 to 1995 except 1988 and 1992. This was due to a crude sewage discharge which is the subject of a SWWSL improvement scheme. Sewage flows from Lynton and Lynmouth now receive primary treatment before being discharged from a new outfall.

Water quality in the Lee Stream has been of concern to both the Agency and the public. We are now monitoring this watercourse on a regular basis and we will conduct investigations if necessary.

Issue	Actions	Action By Lead Other	Cost to Agency (£)	Financial Year				
				97	98	99	00	01
4a Poor water quality leading to failure of environmental standards.	Carry out investigation of the Wilder Brook and Hele Stream and enforce pollution control legislation where necessary.	Agency	2 k	●				
	Carry out investigation of the River Heddon.	Agency	2 k		●			
	Target pollution control work along the River Umber, Croyde, Furzepath and Woolacombe Streams.	Agency	unknown	●	●	●		
	Install UV treatment at Ilfracombe STW.	SWWSL	n/a	●				
4b Water quality in the Lee Stream.	Assess data from monitoring of this watercourse; conduct investigation if necessary.	Agency	<1 k p.a.	●	●			

#### 4.5 Flood Defence

All rivers are classified as either 'main river' or ordinary watercourse (sometimes referred to as non-main river). Main river is designated under the Water Resources Act 1991<sup>4</sup> by the Ministry of Agriculture, Fisheries and Food (MAFF), and formal consent is required for all activities that interfere with the bed or banks of the river or obstruct flow. 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 non-main rivers.

We are required by the DoE 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. We are carrying out a programme to identify flood risk for planning authorities within the catchment. Phase I was completed in March 1997. Phase II is ongoing and will concentrate efforts on development 'hot spots' such as Ilfracombe and Combe Martin.

Flood defence schemes for both areas have presently been withdrawn from the our current Medium Term Plan of Capital Work. At Combe Martin the presence of listed bridges and the ensuing costs on any flood defence work resulted in the poor viability of the designed scheme in terms of benefits compared with costs. This scheme however, is to be re-assessed in a further pre-feasibility study to see if an alternative cost-effective scheme is possible.

Following a feasibility study into a flood alleviation scheme in south west Ilfracombe, three alternative schemes were produced. However, the only feasible option, piecemeal improvements along the watercourses, was not favoured by North Devon District Council who preferred either the construction of a flood retention reservoir on the East Wilder Brook or a tunnel to discharge floodwater direct to the sea. Neither of these schemes are viable and therefore the Ilfracombe Scheme has been withdrawn from the Medium-term Plan of Capital Work.

We maintain rivers and flood defence structures to minimise the risk of flooding. To continue to improve the efficiency and effectiveness of this work, we try to target areas of greatest need using a method called 'Standards of Service' (SoS).

This method involves setting target standards for flood protection for land depending upon its use. We are currently collecting the information we need to put this method into practice by carrying out an asset survey. We will then compare actual standards against the target standards and address the difference.

We are a member of the North Devon and Somerset Coastal Group, which includes Sedgemoor District Council (lead body), Devon County Council, North Devon District Council, Somerset County Council, West Somerset District Council, English Nature, MAFF, and Torridge District Council. This Group will oversee the production of the Bridgwater and Bideford Bays Shoreline Management Plan (SMP), which includes this length of coast and will ensure that coastal defences will take full account of coastal processes. The SMP is being developed in three stages. The first stage was a Scoping Study which identified the extent and relevance of existing information and the work required in subsequent phases. This was completed during 1995. The plan is entering Stage 2 of the process, which involves acquiring additional data, studying the coastal processes, analysing the issues relating to the human and natural environments, developing strategic policies and producing the SMP documents which contain the proposed strategy for future coastal defence management. These studies and Plan development are scheduled to be completed by the end of 1997. The third and final phase will be the adoption of the Plan by the individual authorities following wide consultation.

Table 5 Flood Defence

Issue	Actions	Action By Lead <i>Other</i>	Cost to Agency (£)	Financial Year				
				97	98	99	00	01
5a Need to identify flood risk for planning authorities, taking account of the timetable for preparing district wide Local Plans.	Specify details of any pilot work, if applicable, otherwise the programme is due for completion by 1999, subject to national approval.	Agency	3 k			●		
5b Flood problems have been identified at Ilfracombe and Combe Martin.	Review flood problems at Ilfracombe and Combe Martin.	Agency	6 k	●	●			
5c Need to improve the efficiency and effectiveness of our flood defence work.	Implement the flood defence management system by carrying out asset survey.	Agency	13 k			●		
	Compare actual against target Standards of Service and address the differences.	Agency	unknown			●	●	●
5d Coastal defence works need to consider coastal processes.	Undertake Shoreline Management Plans.	SDC, Agency, Maritime and other LAs, Other landowners/consultees	49 k	●				

## 4.6 Air Pollution

Ambient concentrations of air pollutants are generally lower in the South West of England than in many other parts of England and Wales, although data on local air quality is somewhat limited.

The UK National Air Quality Strategy was published in March 1997. The strategy sets standards and objectives for air quality in the UK and provides guidance on how these standards and objectives may be met, through action at National and local levels. A programme involving pilot projects is currently underway, the results of which are not expected until the Autumn. Implementation of the guidance is therefore not expected until April 1998 at the earliest.

As a result of the guidance local authorities will be reviewing air quality in their areas, if certain standards or guidelines are exceeded, an Air Quality Management Area may be designated, which will require an Air Quality Management Plan to be developed. These air quality reviews, by both North Devon District Council and West Somerset District Council will improve knowledge of air quality in the catchment. However, it is anticipated that no location within this catchment will be designated an Air Quality Management Area.

The standards in the UK Air Quality Strategy are based purely on human health, although standards for protecting certain elements of the natural environment have been proposed by a working group of the United Nations Economic Commission for Europe (UNECE)<sup>6</sup>. We will work with other organisations to develop further air quality standards where necessary.

Currently, there are concerns that air pollution may be having an effect on sensitive habitats and species in the catchment. There are three principle concerns; acidification, eutrophication from the deposition of atmospheric nitrogen and the direct effect of air pollutants on sensitive lower plants.

### Acidification

Moorland streams are typically acid due to the underlying geology and soils. The natural acidity of Exmoor however may be exacerbated by atmospheric acid deposition, principally from oxides of nitrogen and sulphur. These compounds come mainly from the burning of fossil fuels.

Sulphur dioxide is responsible for around two thirds of the atmospheric acid deposition in the UK. However, ambient air concentrations of sulphur dioxide are decreasing across England and Wales, and this downward trend is predicted to continue. International sulphur emission reductions have been agreed under the Second Protocol on the Further Reduction of Sulphur Emissions<sup>7</sup>. Under this Protocol the UK has agreed to reduce its sulphur dioxide emissions by 80% by 2010 from a 1980 baseline. The UK's sulphur strategy<sup>8</sup> indicates that the UK will meet interim targets for 2000 and 2005. Compliance is also expected with the 80% reduction target for 2010.

Emissions of nitrogen oxides are responsible for around a third of atmospheric acid deposition in the UK. Vehicles are responsible for about half the emissions of nitrogen oxides in the UK.

Research in the UK over the last 20 years has led to the development of effects based emission control policies through the formulation of a critical loads approach. This approach involves assigning a critical load of acidity to a particular ecosystem; that is the amount of acid deposition below which harmful effects do not occur according to present knowledge. Moorland ecosystems are very sensitive to acid deposition, and have a correspondingly low critical load. Current or predicted acid deposition over an area can be compared with the critical load to see if it is being exceeded.

Map 3 shows modelled critical load exceedences for soils in 1995 and 2005.

Critical loads were being exceeded over Exmoor in 1995 but the predicted exceedences for 2005 are greatly reduced. This is based on the planned emission reductions described above.

At a national level we will be working with other bodies and with industry to ensure that planned emission reductions are achieved. At a catchment scale it is important that changes in land use do not lead to an increase in acid deposition. The development of forestry can increase the level of deposition as the forest canopy 'scavenges' acidic compounds from the air.

It is therefore important that any proposals for forestry development with the areas which are exceeding their critical loads are subject to an environmental impact assessment. This is in line with the Forest and Water Guidelines<sup>9</sup>.

### Eutrophication

In upland areas, where nutrients are usually quite limited, there is growing concern that the deposition of atmospheric nitrogen can act as a fertiliser and cause changes to plant growth. Little is currently known about this eutrophication problem and we will work with other agencies to gain a better understanding of the problem.

### Direct effects of Air Pollution on Sensitive Species

The effects of air pollution on semi-natural habitats are still poorly understood. The extensive semi-natural woodlands, seacliffs and old deer parks support a number of rare and declining species which have survived because of the high humidity and clean air of this part of the country. Despite the relatively low pollutant concentrations in the catchment, there are concerns about lichens and other lower plants, such as mosses and liverworts, which are particularly sensitive to air pollution, especially sulphur dioxide and there is some evidence that pollution intolerant species have declined on Exmoor. Of particular importance is the moss *Bryum gemmiparum* which grows along the streams of this catchment. We need to ensure that its status is protected and enhanced if possible; actions to achieve this are likely to have beneficial effects for other plants and animals, thus helping to protect the overall biodiversity of the area. Suitable Biodiversity targets (see section 4.7) have been included in Table 6 for lichens and *Bryum gemmiparum*.

In this catchment ambient air concentrations of sulphur dioxide concentrations have been estimated at below 5 ug/m<sup>3</sup> (1994, annual mean sulphur dioxide concentration)<sup>10</sup>, This is lower than the proposed critical level of 10 ug/m<sup>3</sup> which is aimed to protect sensitive lichens<sup>4</sup>.

Table 6 Air pollution

Actions	Action By Lead Other	Cost to Agency (£)	Financial Year				
			97	98	99	00	01
6a Review air quality in the area.	NDDC, WSDC	n/a		●	●		
6b Promote survey work to check distribution of important declining species and share data.	EN ENP, Agency, NT	unknown	●	●	●	●	●
6c Encourage and co-operate in development of clear air quality standards to protect key species.	Agency, EN, JNCC, ENP	unknown	●	●	●		
6d Work with other regulatory bodies to agree sources of pollution.	Agency, LAs	unknown	●	●	●		
6e Ensure all proposals for forestry development within the areas of critical load exceedence receive an environmental impact assessment.	Agency, Forestry Authority,	unknown	●	●	●	●	●

Target: Ensure no further decline of the moss *Bryum Gemmiparum*  
Target: Maintain suitable air quality to sustain healthy populations of key lichen species.

#### 4.7 Conservation of the Natural Environment

Conservation of both habitats and species is co-ordinated through the production of Biodiversity Action Plans (BAPs). This process, which began at the Rio Summit in 1992, enables us and other conservation bodies to prioritise and concentrate our efforts where they are most needed.

In Devon, the Devon Wildlife Trust (DWT), supported by the Agency and other groups, have published a BAP for our rivers and wetlands<sup>11</sup>; this will now form an important part of the forthcoming Biodiversity & Earth Science Action Plan for Devon.

Many semi-natural habitats and associated species are declining in extent or numbers, or under threat from a range of activities. We are identifying, with partner organisations, the key features, habitats and species on which we will concentrate our conservation efforts. Those which we feel are particularly relevant to activities in which the Agency has an involvement are shown in Tables A and B. The tables also show major threats, where they are known.

Table A Key habitats and species in the North Devon Streams Catchment

Key habitats/Species	Status	Threats in this catchment
Blanket bog <i>Cranberry</i> <i>Spagnum</i>	Internationally Important National decline	Overgrazing, burning, drainage
Valley mire <i>Keeled skimmer</i> <i>Reed bunting</i> <i>Curlew</i>	Nationally important South West Speciality National decline National decline	Localised overgrazing, burning, drainage, pond construction
Marshy grassland <i>Marsh fritillary</i>	Nationally important National decline	Agricultural improvement neglect/undergrazing, pond creation
Upland heath  <i>Heather</i> <i>Heath fritillary</i>	Internationally important  National decline	Burning, bracken/rhododendron invasion, over grazing
Western heath <i>Western gorse</i>	Internationally important	Cessation of management
Purple moor-grass moorland <i>Skylark</i>	Internationally important National decline	Agricultural improvement, neglect
Western oakwoods  <i>Lichens</i> <i>Mosses</i>	Internationally important  Various depending on species, some in national decline	Rhododendron invasion Overgrazing Possibly air pollution
Upland rivers & streams <i>Otter</i> <i>Atlantic salmon</i> <i>Bullhead</i> <i>Mosses (including Bryum gemmiparum)</i>	Nationally important Internationally threatened Internationally important Possibly threatened internationally. Various, <i>B. gemmiparum</i> is rare.	Invasive plant species
Rocky shores Seacliffs	Nationally important Lichens	Possibly air pollution

Table B Key geological features in the North Devon Streams Catchment

Coastal exposures of folded strata
Marine fossil faunas
River geomorphology



### Key catchment habitats and species associated with the terrestrial environment

A large part of the catchment falls within Exmoor National Park, which is also designated an Environmentally Sensitive Area (ESA). Concerns have been expressed at the loss of conservation value, partly as a result of changes in agricultural practices.

Countryside Stewardship, another MAFF/FRCA scheme also provides support for the benefit of wildlife, landscape and the historic environment. A number of sites are already under agreement in the catchment. Help with applications may be available from bodies such as NDHCS and DWT.

Several upland habitats, which in this catchment occur mainly on Exmoor, are particularly vulnerable to changes in management. Blanket bog, valley mire, grass moor, upland and western heaths and marshy (Culm) grassland are all recognised as at least nationally important. Their successful conservation relies largely on continued management; traditional farming methods are encouraged through the ESA (Environmentally Sensitive Area) scheme, funded by MAFF and administered by FRCA. Uptake has been good within the area covered, but outside Exmoor the scheme does not apply. However, even within the area there are some problems in places.

Overgrazing can have damaging results, with rarer habitats being converted to grass moor which supports fewer species. There are also concerns that overgrazing results in reduced attenuation of runoff, erosion of stream banks and widening of channels leading to increased vulnerability to siltation. Less work has been done on the problem in this catchment than on Dartmoor, but the same principles appear to apply. At the other extreme, neglect or abandonment of marginal agricultural land, such as upland or western heath, leads to encroachment by bracken or rhododendron and a similar loss of conservation value. Loss of unimproved grass and wetland to agricultural improvement and uncontrolled burning on the wetter moorland heathland are also matters of concern.

Swaling (burning) of moorland can be a valuable management tool when carried out correctly, benefiting both farming and wildlife. The main requirements are for small areas to be burnt on a regular cycle, with carefully controlled fires during spring; clear guidelines have been produced. Unfortunately these are often ignored, with large scale uncontrolled burning now occurring almost annually. These fires cause extensive damage to important habitats; heather may not recover for ten to fifteen years, if at all. Hot, prolonged burning destroys the peat which is the base for blanket bog or valley mire; as a result not only are the associated plants and animals lost, but also the land ceases to act as a sponge which can soak up rain and release it slowly to support river flow during dry summers. Drainage of marshy grasslands, or the creation of ponds in wetland areas have similar effects. On grass moors, uncontrolled swaling can destroy nests of the remaining important population of skylarks, among other species.

Associated species are at risk in these threatened habitats; valley mire is notable for the presence of several key species. The keeled skimmer is the only key dragonfly species known to occur in the catchment, but this may reflect the historic lack of recording of this important group in the area, in contrast to the much more intensively studied South Devon catchments. The British Dragonfly Society (BDS) has suggested a need for increased effort to identify important sites and species. Reed bunting and curlew both appear to be susceptible to increasing agricultural intensification and both species have declined significantly. Marsh fritillary butterflies are very closely linked to the Culm grasslands of North Devon, and in this catchment they are found on the similar marshy grasslands. For success they need large areas of suitable habitat so that several different sub-colonies can interact.

Table 7 Key catchment habitats and species associated with the terrestrial environment

Issue	Actions	Action By Lead Other	Cost to Agency (£)	Financial Year				
				97	98	99	00	01
7a Encourage appropriate management of habitats.	Make clear recommendations to reviews of ESA to ensure appropriate payment levels set.	Agency	<1 k	●	●			
	Identify wetland or other important wildlife sites that would benefit from revised management.	Agency, ENP, NT, DWT, NDDC, NDHCS	3 k		●	●	●	
	Work with landowners and partner bodies to encourage entry into schemes such as Countryside Stewardship.	FRCA, Agency, DWT, ENP, NDHCS	2 k	●	●	●	●	●
	<i>Targets: 1. Promote uptake of ESA so that 80% of eligible land is under agreement by 2005.</i>  <i>2. Outside ESA area, 80% of all County Wildlife Sites larger than 5 hectares to be entered into management agreements for 2005 or other protective ownership.</i>							
7b Loss and/or deterioration of wetland habitats.	Raise public awareness of value of wetland habitats in relation to water resource issues.	Agency, DWT, ENP	2 k		●	●		
	Promote good practice for swaling, publicise risks of uncontrolled burning.	ENP, EN, MAFF, FRCA	<1 k	●	●	●		
	Update information on pond creation to reduce number of appropriate sites.	Agency, FWAG, DWT, ENP	2 k		●	●		
	Promote and implement BAP for blanket bog, valley mire and marshy grassland.	Agency, EN, NT, DWT, ENP	6 k		●	●	●	
	<i>Targets: 1. No further net loss of blanket bog, valley mire or marshy grassland.</i>  <i>2. Reinstate natural drainage regime for one degraded site by 2000.</i>							
7c Conservation of species associated with wetland habitats.	Encourage recording of dragonfly species by Agency field staff.	Agency, BDS	2 k	●	●	●	●	●
	Collaborate with British Dragonfly Society and others to improve recording in North Devon.	Agency, BDS, ENP, NT	2 k	●	●	●	●	●
	Promote and implement actions from curlew and marsh fritillary BAP.	DWT, Agency, EN	7 k		●	●	●	●

Issue	Actions	Action By Lead Other	Cost to Agency (£)	Financial Year				
				97	98	99	00	01
7d Loss and/or deterioration of heathland habitats.	Encourage retention of riparian strip of tall emergent vegetation along ditches and streams.	Agency, ENP, DBWPSoc, NT	3 k		●	●	●	
	<i>Targets: 1. Increase number of breeding curlew by 50% by 2005.</i>							
	<i>2. Retain all existing marsh fritillary colonies.</i>							
	<i>3. Provide suitable conditions for establishment of one new marsh fritillary colony by 2005.</i>							
	<i>4. Reverse decline of reed bunting colony throughout catchment by 2005.</i>							
	Promote and implement actions from regional and county heathland strategies.	RSPB, EN, DWT, DCC, NT, ENP, Agency	6 k		●	●	●	
	Eradicate invading rhododendron and bracken from heath where possible.	ENP, NT, EN	2 k	●	●	●	●	
	Provide formalised drinking areas for stock.	Landowners, Agency, ENP	2 k		●	●		
	<i>Targets: 1. No net loss of upland heath where possible.</i>							
	<i>2. Restore 20 hectares of degraded heath by 2005.</i>							

### Key catchment habitats and species associated with the freshwater environment

The rivers and streams of this catchment support a range of typical species found in clean, fast-flowing rivers; while many are common in this area, these populations may be important in a regional or even national context. Otters are becoming increasingly common in Devon and Cornwall; indeed there are signs of an encouraging recovery across the country. This catchment's otter population, although presently relatively low, is immensely important because animals are spreading into the more sparsely populated areas to the east. It is vital, therefore, that we try to ensure that conditions are as good as possible for the species so that expansion proceeds quickly. One threat to otter numbers are deaths on the roads. Black spots need to be identified and measures to prevent further casualties taken. The Biodiversity Plan for Devon's Rivers and Wetlands<sup>11</sup> includes targets and actions for the future conservation of otters, and encouraging recovery of the otter population is a priority for us in our role as species contact point under the biodiversity initiative.

Bankside cover in the form of trees is particularly important for otters and other wildlife associated with the river corridor and for stabilising banks. In some locations bankside trees have been lost, either due to agricultural or forestry practices. In some places non-native species such as sycamore, beech and rhododendron are invading the typical oak woodland, reducing its wildlife value, however their removal has led to a loss of bankside cover. In addition,

sycamore in particular has its own wildlife value as it has an extensive root system which can provide otter holts and it also provides a good substrate for lichen growth. We will work with others to promote regeneration of bankside trees where it has been lost and to ensure that sycamore removal takes account of its value as bankside cover.

**Table 8 Key catchment habitats and species associated with the freshwater environment**

Issue	Actions	Action By Lead Other	Cost to Agency (£)	Financial Year				
				97	98	99	00	01
<b>8a Recovery of otter populations.</b>	Promote and implement actions for otters from R&W BAP.	DWT, Agency, NDDC, ENP, NT, volunteers, riparian owners, other wildlife trusts	2 k p.a.	●	●	●	●	●
	Incorporate actions to benefit otters in countryside management schemes.	FRCA	<1 k	●	●	●	●	●
	Reinstate bankside trees and scrub, with blocks of suitable cover.	Agency, ENP, NDDC	3 k		●	●	●	●
	Extend network of volunteer otter surveys.	DWT, SWT, ENP	<1 k	●				
	<i>Targets: 1. Restore by 2010 breeding otters to all catchments where recorded since 1960.</i> 2. Reduce by 25%, by 2000, number of otters killed on roads in Devon.							
<b>8b Loss of bankside trees.</b>	Promote retention and suitable management of bankside trees.	Agency, FA, FRCA, EN, ENP, NDHCS	3 k	●	●	●	●	●
	Encourage removal of sycamore at appropriate locations.	Agency, FA, EN, ENP, NDHCS	3 k	●	●	●	●	●
	Encourage regeneration or planting of native species.	Agency, FA, EN, ENP NDHCS	3 k	●	●	●	●	●

**Key catchment habitats and species associated with the marine environment**

The rocky shores and sub-tidal areas along the coast of the catchment are particularly important habitats; this is recognised by the designation of part as a Voluntary Marine Conservation Area (VMCA) and part as a Sensitive Marine Area (SMA). Neither title is statutory, but there are few areas in the South West which do carry formal designation. VMCA's have been shown to be an effective tool for raising awareness among both users and the general public. Where we are active on fisheries or water quality work we may be able to gather useful information to assist in their work.

**Table 9 Key catchment habitats and species associated with the marine environment**

Issue	Actions	Action By Lead Other	Cost to Agency (£)	Financial Year				
				97	98	99	00	01
9a Need for protection of marine habitats.	Support activities of NDHCS relating to the Voluntary Marine Conservation Area.	Agency, NDHCS	1 k p.a.	●	●	●	●	●
	Contribute to data collection and survey through work of coastal patrols.	Agency	<1 k p.a.	●	●	●	●	●
	<i>Target: Retain existing diversity and distribution of rocky shore plant and animal communities.</i>							

### Spread of invasive plants

Four invasive plant species are found in the catchment; Himalayan balsam, Himalayan knotweed, Japanese knotweed, and giant hogweed. Himalayan knotweed has become the dominant vegetation in some places, notably the lower reaches of the Lyn, it is also present on the River Umber at Combe Martin, where giant hogweed is also found. Giant hogweed is a potential danger to public health; the stems and edges and undersides of the leaves bear small hairs which are coated with a poisonous sap and even the slightest touch can cause painful blistering and severe irritation. We will continue to remove invasive species on Agency owned land, however a concerted effort from all relevant bodies and landowners is required if these species are to be controlled in other part of the catchment. The Agency have produced a leaflet 'Guidance for the Control of Invasive Plants near Watercourses' which is available from our Exeter office.

The nature of woodlands is also threatened by the invasion of rhododendron, an alien species introduced as an ornamental which is now spreading at an alarming rate. It casts dense shade and excludes native ground flora. We will work with others to ensure that the high conservation value of the valley woodlands along the rivers is maintained.

**Table 10 Spread of invasive plants**

Issue	Actions	Action By Lead Other	Cost to Agency (£)	Financial Year				
				97	98	99	00	01
10a Spread of invasive plants.	Control invasive species on Agency owned or managed land.	Agency, NT, riparian owners	3 k p.a.	●	●	●	●	●
	Develop strategy for control of invasive plants in other areas of the catchment.	Agency, NDHCS, EHCS	2 k	●				
	Implement strategy.	NT, ENP, EN, Agency, NDHCS, EHCS	10 k p.a.		●	●	●	●

### Lack of current information on the natural and historic environment

There are certain important habitats, species and geological features about which there is insufficient knowledge to gauge whether action is required to protect them. Nature Conservation Sites within the catchment include 11 Sites of Special Scientific Interest. Surveys by Devon and Somerset Wildlife Trusts have identified a number of wildlife sites of lesser importance. These are recognised as being important at a local level, and are often subject to Local Plan policies protecting them from damage or disturbance. In a similar way, surveys of Regionally Important Geological Sites (RIGS) are being carried out which will allow further protection. The information on both wildlife and geological sites is very helpful to us, but requires regular updating of databases.

**Table 11 Lack of current information on the natural and historic environment**

Issue	Actions	Action By Lead Other	Cost to Agency (£)	Financial Year				
				97	98	99	00	01
11a Lack of current information on the natural and historic environment.	Support updating and maintenance of databases.	Agency, RIGS, DWT, EN, DPWPSoc, DCC, NDCC, NT	Unknown	●	●	●	●	●
	Encourage identification of RIGS.	County RIGS Groups	3 k		●	●	●	●
	Promote interest in important earth science features, especially river geomorphology.	County RIGS Groups LAs, Agency, EN	2 k			●	●	●
	Prevent damage to undesignated geomorphological sites.	County RIGS Groups LAs, Agency, EN	3 k	●	●	●	●	●

## 4.8 Recreation

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

The catchment area is a very popular area with visitors and in certain areas, particularly on the River Lyn, the numbers of walkers using riverside paths may disturb wildlife. We will work with other interested parties wherever we can to ensure balance between the needs of both recreation and wildlife.

The River Lyn provides some of the most challenging canoeing in the area, though on a strictly controlled basis. The season runs from 1 November to 28 February, thus avoiding conflict with fishery interests. Numbers of canoeists are limited and prior permission must be obtained from the British Canoe Union Local Access Officer. Some concern has been expressed over the number of breaches of access agreements. We will facilitate discussions between relevant parties to seek to improve these arrangements.

We currently operate a canoeing information telephone line for the River Lyn, which has had limited success. We will be reviewing this telephone line as part of a national project which is aimed at providing high quality up-to-date information phone lines for different water users.

Table 12 Recreation

Issue	Actions	Action By Lead <i>Other</i>	Cost to Agency (£)	Financial Year				
				97	98	99	00	01
12a Need to review arrangements for canoeing on the River Lyn.	Encourage discussions between interested parties to investigate access and control agreements.	Agency, BCU NT, ENP	<1 k	●	●			
	Review success of existing phone line as part of national project.	Agency, BCU	To be determined	●	●			

#### 4.9 Fisheries

The limited potential for migratory fish production in the catchment is partially due to the substrate of much of the accessible river bed being bedrock, with only sparsely distributed gravels suitable for spawning in many areas. The two sites on the River Lyn at which gravel rehabilitation work was carried out in 1995, have been widely used by spawning fish. Further rehabilitation work may be carried out at these sites. The possibility of creating new areas of spawning gravels will be considered following a survey to identify potential sites, which will be carried out in 1998. Some of the best spawning gravels are located on the upper stretches of watercourses, at sites which are inaccessible to migratory fish due to natural barriers. These inaccessible sections are likely to contain genetically isolated populations of indigenous brown trout. We consider it important that these stocks are kept in pristine condition and do not intend to improve fish passage at natural barriers which totally exclude migratory fish.

Apart from the River Lyn, many of the streams and tributaries of the River Lyn are presently unmonitored for fisheries. A full survey of the catchment is to be carried out in 1997 and again in 2000. This will identify any obvious gaps in the information we hold and allow the introduction of new watercourse stretches into the routine fisheries survey programme if necessary.

There are a number of obstacles in the catchment which reduce and even prevent fish passage. Some of these are caused by the natural barriers of rock formations and steep gradients. On the West Lyn River, fish passage is prevented at all flows below the Glen Rock Hotel. Even under exceptionally favourable flows, steep gradients above this natural barrier would present extreme difficulty to migrating fish. On the East Lyn, a series of natural falls with associated pools impede fish passage. The falls associated with Vellacotts Pool and Stag Pool present obstacles at low flows. Further upstream, the falls associated with Long Pool is the most significant barrier and is passable only in a very limited range of flows. The large numbers of fish which may accumulate in low flow conditions are highly vulnerable to poaching and a high level of enforcement is necessary. In order to improve conditions for fish migration at Long Pool, we will establish the current migration route over the obstacle and the range of flows at which the pool is impassable. The Chalk Water, a tributary of the East Lyn is totally inaccessible due to a natural obstruction. We do not intend to improve fish passage at natural barriers which totally exclude migratory fish from parts of the catchment. Such inaccessible sections of watercourses are likely to contain genetically isolated populations of indigenous brown trout which it is considered important to maintain.

Most of the streams to the west of the River Lyn, including the River Heddon, are passable only when high spring tides coincide with spate conditions due to restricted sea access. However, the weir at Mill Park Caravan Site on the Sterridge Valley Stream, creates a complete barrier to fish migration.

In some areas of Exmoor, dams constructed by tourists create temporary obstructions, and require removal on a regular basis, in order to prevent increases in water depth which can make spawning gravels unsuitable.

As a result of the national Strategy for Management of Salmon<sup>12</sup>, 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 River Lyn in the financial year 1999/2000, to be circulated for consultation in April 2000.

The Agency leases much of the fishing in the East Lyn River from the riparian owners, principally the National Trust, and we need to ensure appropriate management which allows the fishery to be used to its full potential, thus allowing recovery of costs without detriment to the river or river ecology.

Concern has been expressed by some fisheries interests within the River Lyn subcatchment that the number of returning salmon, and more particularly sea trout has declined in recent years. Although, salmon stocks appear satisfactory, some restriction on sea trout fishing is needed. The fish trap has been suggested as a cause of the decline, and we have, in the past, discussed the possibility of buying out the rights to the trap. In addition we will consider the introduction of a voluntary sea trout bag limit in 1998 which would be implemented by reducing the bag limit specified on Agency fishing permits.

Table 13 Fisheries

Issue	Actions	Action By Lead Other	Cost to Agency (£)	Financial Year				
				97	98	99	00	01
13a Limited potential for migratory fish production in the catchment.	Carry out gravel rehabilitation, taking into account river ecology.	Agency, Riparian Owners	<1 k		●		●	
	Consider the installation of artificial beds or bed check weirs.	Agency, Riparian Owners	<1 k	●				
13b Lack of fisheries data for parts of the catchment.	Conduct surveys of the most significant watercourses to determine the extent and nature of their fisheries.	Agency	11 k	●			●	
13c Barriers to fish movement in the catchment.	Continue to remove temporary obstructions on moorland streams.	Agency, ENP	<1 k p.a.	●	●	●	●	●
	Encourage Exmoor National Park to assist and prevent construction.	Agency, ENP	<1 k p.a.	●	●	●	●	●
	Consider means of improving conditions for fish migration at Long Pool on the East Lyn.	Agency	Unknown		●			
13d Need for comprehensive plan for salmon management in the catchment.	Develop Salmon Action Plan.	Agency	5 k			●	●	



Issue	Actions	Action By Lead Other	Cost to Agency (£)	Financial Year				
				97	98	99	00	01
13e Need to ensure appropriate management of Environment Agency fishery during the period of the lease.	Manage fishery to recover costs with due consideration to the wider impact of angling on the river.	Agency, Anglers, NT	Unknown	●	●	●	●	●
	Consider partial buy back of tidal fish trap licence if stocks appear threatened.	Agency, Licence Owner	To be determined		●			
13f Perceived decline in runs of salmon and sea trout.	Consider introduction of voluntary sea trout bag limit.	Agency, Riparian/ Fishery Owners	<1 k		●			

## 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 reuse, recover or recycle products and materials.
- Reporting on the extent of contaminated land and contributing to its management (primarily undertaken by local authorities).
- Abandoned mine operators are also required to work with the Agency so that steps can be taken to prevent minewater pollution 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 is also the sea fisheries authority for tidal waters. We control commercial fishing for sea fish and shellfish in these waters.

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 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.

The Environment Agency will not be dealing with:

- Waste collection and litter - responsibility remains with local authorities;
- Noise pollution - responsibility remains with local authorities' environmental health departments;
- Drinking water quality - responsibility remains with private water companies and local authorities;
- Public health;
- Those aspects of the control of air pollution which remain with local authorities;
- Planning permission is the responsibility of the Local Authority who will contact us when necessary. The local authorities also deal with contaminated land issues in liaison with us.

## Appendix 2 - Guide to Consultation Report and Action Plan Issues

Former Consultation Report Issue	Table Number in this Action Plan
1. Pollution potential of disused landfill sites at Killacleave, Lyn Down and Leigh Quarry	Table 1, Issue 1a
2. Fly Tipping	Table 1, Issue 1b
3. Risk of pollution and damage to land of conservation value associated with increasing use of land spreading as a waste disposal option	Table 3, Issue 3a
4. Risk of pollution from farm waste and dead livestock in moorland watercourses	Table 3, Issues 3b, 3c
5. Need to review arrangements for canoeing on the River Lyn	Table 12, Issue 12
6. We need to identify flood risk for planning authorities, taking account of the timetable for preparing district wide Local Plans	Table 5, Issue 5a
7. Flood problems have been identified at Ilfracombe and Combe Martin	Table 5, Issue 5b
8. We need to improve the efficiency and effectiveness of our flood defence work	Table 5, Issue 5c
9. We need to understand how the coastline is changing	Table 5, Issue 5d
10. Need for improvement of water quality in Croyde Stream and Woolacombe Stream	Table 4, Issue 4a
11. Bathing water non-compliance	Table 4, Issue 4a
12. Need for a better understanding of air quality and its effect in the catchment	Table 6, Issues 6a, 6b
13. Loss of conservation value of wider catchment	Table 7, Issue 7a, 7b and 7d
14. Need for protection of marine habitats	Table 9, Issue 9a
15. Need for current information on important wildlife and geological sites to inform Agency decisions and actions	Table 11, Issue 11a
16. Need for conservation of key habitats and moorland species	Table 7, Issues 7a, 7b, 7c and 7d
17. Patchy recovery of otter population	Table 8, Issue 8a
18. Control of Mink	Issue dropped
19. Need for conservation of marine mammals	Table 9, Issue 9a
20. Need for conservation of cliff nesting birds	Table 9, Issue 9a
21. Need for better understanding of status of <i>Odonata</i> in North Devon	Table 7 Issue 7c
22. Loss of bankside cover due to removal of sycamore from semi-natural woodlands	Table 8, Issue 8b
23. Spread of invasive bankside plants	Table 10, Issue 10a
24. Limited potential for migratory fish production in the catchment	Table 13, Issue 13a
25. Lack of fisheries data for parts of the catchment	Table 13, Issue 13b
26. Barriers to fish movement in the catchment	Table 13, Issue 13c
27. Need for a comprehensive plan for salmon management in the catchment	Table 13, Issue 13d
28. Need to ensure appropriate management of Environment Agency fishery during the period of the lease	Table 13, Issue 13e
29. Perceived decline in runs of salmon and sea trout	Table 13, Issue 13f

New Issues	Table Number in the Action Plan
Lack of information on status of contaminated land in the catchment	Table 2 Issue 2
Water quality in the Lee Stream	Table 4, Issue 4b
Encourage and co-operate in development of clear air quality standards to protect key species	Table 6, Issue 6c
Work with other regulatory bodies to agree sources of pollution	Table 6, Issue 6d

## Abbreviations

Agency	Environment Agency
AONB	Area of Outstanding Natural Beauty
BAP	Biodiversity Action Plan
BCU	British Canoe Union
BDS	British Dragonfly Society
BOD	Biological Oxygen Demand
DAS	Devon Archaeological Society
DBWPSoc	Devon Bird Watching & Preservation Society
DCC	Devon County Council
DoE	Department of the Environment
DWT	Devon Wildlife Trust
EHCS	Exmoor Heritage Coast Service
EN	English Nature
ENP	Exmoor National Park
ESA	Environmentally Sensitive Area
FRCA	Farming & Rural Conservation Agency
FWAG	Farming & Wildlife Advisory Group
HMIP	Her Majesty's Inspectorate of Pollution
JNCC	Joint National Conservation Committee
LA <sub>s</sub>	Local Authorities
LEAP	Local Environment Agency Plan
MAFF	Ministry of Agriculture, Fisheries & Food
NDDC	North Devon District Council
NDHCS	North Devon Heritage Coast Service
NFU	National Farmers Union
NRA	National Rivers Authority
NT	National Trust
p.a.	Per Annum
R&W	Rivers and Wetlands
RIGS	Regionally Important Geographic Sites
RQO	River Quality Objective
RSPB	Royal Society for the Protection of Birds
SMA	Sensitive Marine Area
SMP	Shoreline Management Plan
STW	Sewage Treatment Works
SWT	Somerset Wildlife Trust
SWWSL	South West Water Services Ltd
UK	United Kingdom
UNECE	United Nations Economic Commission for Europe
UV	Ultra-violet
VMCA	Voluntary Marine Consultation Area
WDA	Waste Disposal Authority
WRA	Waste Regulation Authority
WRc	Water Research Centre
WSDC	West Somerset District Council

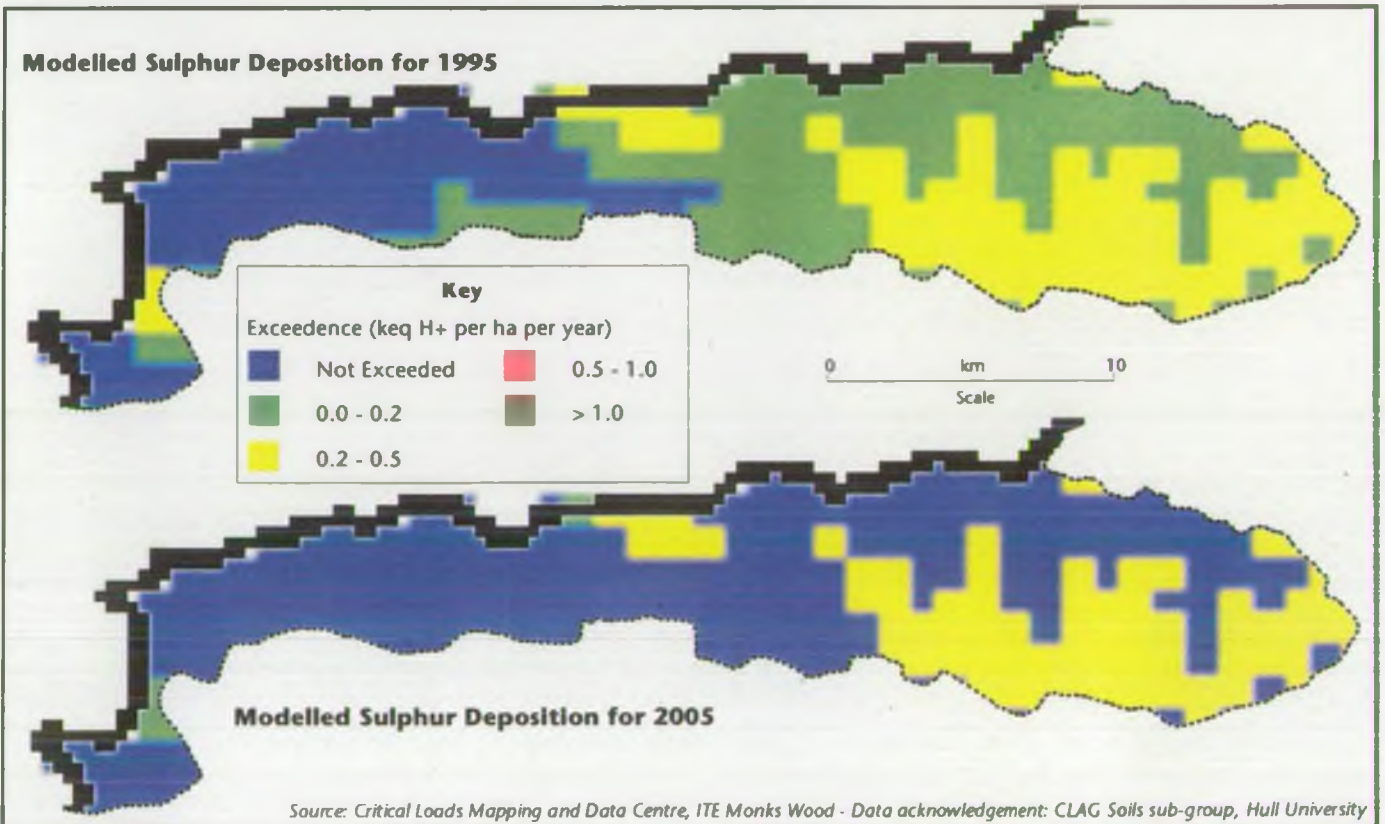
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- <sup>3</sup> The Environment Act 1995, HMSO.
- <sup>4</sup> Water Resources Act 1991, HMSO.
- <sup>5</sup> Environmental Protection Act 1990, HMSO.
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- <sup>12</sup> Strategy for the Management of Salmon, National Rivers Authority 1996.

**Map 2 1996 Compliance with River Quality Objectives (River Ecosystem Classification)**



**Map 3 Exceedences of Critical Loads of Acidity for Soils**



Source: Critical Loads Mapping and Data Centre, ITE Monks Wood - Data acknowledgement: CLAG Soils sub-group, Hull University

Information correct as of June 1997

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# maps 2 & 3

**Fold out for Map 2**

**1996 Compliance with River Quality Objectives (River Ecosystem Classification)**

**Map 3**

**Exceedences of Critical Loads of Acidity for Soils**



## 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.

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**0645 333 111**

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

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