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local environment agency plan

AVON AND ERME

FIRST ANNUAL REVIEW

FEBRUARY 2000



ENVIRONMENT
AGENCY

AVON & ERME LEAP – 1st ANNUAL REVIEW

FEBRUARY 2000

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|-----|--------------------------------------|-----|---------------------------------|
| n/a | Costs not attributable to the Agency | <1k | Costs to Agency are under £1000 |
| u/k | Costs to Agency are unknown | pa | Per Annum |

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ENVIRONMENT AGENCY



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1 CATCHMENT VISION

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. Our vision of the Avon & Erme 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.

Achievement of the 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 working with local authorities.

2 SUMMARY

Good progress has been made in the first year of this management plan. Work is underway on over half of the actions and many have already been completed (see below).

Some of the most important environmental improvements, however, are yet to come. We have negotiated some major improvements to 14 major sewage discharges across the catchment, which will take place over the next five years. The LEAP process has been crucial in identifying where improvements are most needed.

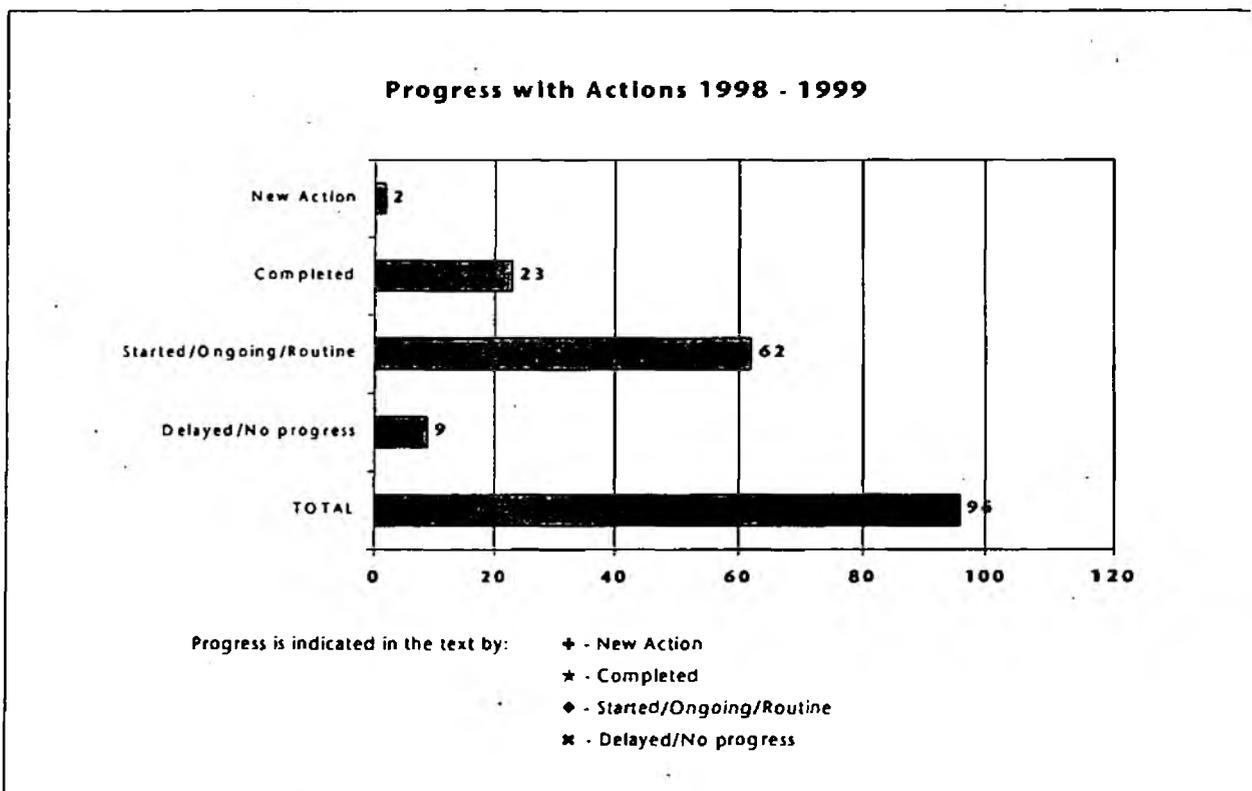
These improvements to sewage discharges will place even more importance on tackling pollution from other sources, namely agriculture. A campaign aimed at improving the management of farm waste in the coastal area, was well received by farmers, with over 70% reporting that they would change the way that farm wastes were managed. More work is needed however, to tackle the problems of diffuse organic pollution, soil erosion and nutrient enrichment. Collaboration is required between the many organisations involved and the farming community, and we are seeking funds for a project to do this.

A number of waste management problems have been resolved, including; a reduction in fly-tipping at two problem sites, and a plan to clean another site. A number of companies in the catchment have been able to reduce the waste they produce and potential problems at some closed landfill sites have been investigated.

A lack of funding continues to affect our progress in fisheries and with some of our work on biodiversity. However, habitat improvement works have been carried out with the River Avon Fishing Association, and an application for funds for conservation management at both Slapton and South Milton Leys is in preparation.

Work with the Salcombe Kingsbridge Estuary Project has been productive, with a scheme now in place to deal with the potentially toxic waste from boat scrapings and a system to reduce sewage being discharged from boats to the estuary.

During 2000, we will build on those actions where work has started and aim to initiate work in those areas where there has been a lack of progress.



3 INTRODUCTION

This is the First Annual Review of the Avon & Erme Action Plan. It introduces the Environment Agency and summarises progress made with actions. Previous publications relating to this catchment contain more detail; this review should be read in conjunction with these publications:

- Rivers Avon & Erme LEAP Consultation Report – January 1997¹
- Avon & Erme Action Plan – December 1998²

These publications are available on request.

3.1 The Environment Agency

The Environment Agency has a wide range of duties and powers relating to different aspects of environmental management. These duties, together with those areas where we have an interest but have no powers to act, are described in more detail in Appendix 2. We are required and guided by Government to use these duties and powers in order to help achieve the objective of sustainable development. Sustainable development has been defined as *"development that meets the needs of the present without compromising the ability of future generations to meet their own needs"*.

At the heart of sustainable development is the integration of human needs and the environment within which we live. The creation of the Agency was, in part, recognition of the need to take a more integrated and longer-term view of environmental management at a national level. We have to reflect this in the way we work and in the decisions we make.

Taking a long-term perspective requires us to anticipate risks and encourage precaution, particularly where impacts on the environment may have long-term effects, or when the effects are not reversible. We must also develop our role to educate and inform society as a whole, as well as carrying out our prevention and enforcement activities, to ensure continuing protection and enhancement of the environment.

One of the key outcomes of the United Nations "Earth Summit" held in Rio de Janeiro in 1992 was agreement by governments that, to solve global environmental problems, local action is crucial: we must all therefore think globally but act locally.

Our Vision is:

- a better environment in England and Wales for present and future generations

Our aims are to:

- achieve major and continuous improvements in the quality of air, land and water
- encourage the conservation of natural resources, animals and plants
- make the most of pollution control and river-basin management
- provide effective defence and warning systems to protect people and property against flooding from rivers and the sea
- reduce the amount of waste by encouraging people to re-use and recycle their waste
- improve standards of waste disposal
- manage water resources to achieve the proper balance between the country's needs and the environment

- work with other organisations to reclaim contaminated land
- improve and develop salmon and freshwater fisheries
- tell people about environmental issues by educating and informing
- set priorities and work out solutions that society can afford

We will do this by:

- being open and consulting others about our work
- basing our decisions around sound science and research
- valuing and developing our employees
- being efficient and businesslike in all we do

3.2 Local Environment Agency Plans

We are committed to a programme of Local Environment Agency Plans (LEAPs). These plans help us to identify and assess, prioritise and solve local environmental issues related to our functions, taking into account the views of our local customers. LEAPs replace the Catchment Management Plans, which were produced by the former National Rivers Authority.

The LEAP process involves several stages as outlined below.

The Consultation Report - Publication of the Consultation Report¹ marked the start of a three-month period of formal consultation, which enabled external organisations and the public to work with us in planning the future of the local environment. At the end of the consultation period, we produced a Statement on Public Consultation⁴ that gave the results of the process.

The Action Plan - The Action Plan² takes into account the results of the consultation. It includes numerous actions identifying costs, timescales and partner organisations. Agreed actions are incorporated into our annual business plans.

Some issues can be resolved through our statutory and routine work programme, whilst others require action over and above our day-to-day business. Funding for the latter is not always certain. Usually, because of the short-term nature of our funding, we can only firmly commit ourselves to action in the current and next financial years. Our priorities, policies and budget may change; these changes will be reflected at each Annual Review.

Some issues require solutions beyond the scope of our existing budgets or technology – they are nevertheless valid issues and earn their place in this plan, in the hope that a solution may be found in the future.

In most cases we show the anticipated cost against an action. These are estimated costs to give the reader an idea of the relative size and resource implications for each action.

The Annual Review - We monitor implementation of the Action Plan² and report on the year's progress in a published Annual Review. The Annual Review also identifies any additional issues and actions needed to maintain progress in light of any changes within the LEAP area. **We invite people to contact us at any time to raise new issues or suggest new actions – this ensures the LEAP process is an active one, which evolves to meet the changing needs of the local environment.** After five years, or sooner if required, we plan to carry out a major review of the progress we have made. At this stage, we intend to produce a new LEAP Consultation Report.

Review of Progress - The following pages outline updates on the various issues, together with the relevant actions as set out in the Action Plan². A summary of progress is given for each action, together with target dates for future work, if applicable. New actions have been added where appropriate.

Future Reviews - We will review progress again in 2001 and details will be published in the Second Annual Review of the Avon & Erme LEAP.

3.3 The LEAP Steering Group

This Steering Group represents a range of commercial, local authority, recreational and environmental interests. They commented upon the Consultation Report and Action Plan prior to public release, and monitor the implementation of the Action Plan, providing us with specific advice on the importance of issues within the catchment. They act as a communication link between ourselves, our committees and the local community. They will help to promote and develop initiatives of benefit to the environment within the catchment. The steering group members are:

| Name | Representing |
|----------------------|--|
| Mr J Bloomer | South Hams District Council (SHDC) |
| Mr K Carter | South Hams Coast and Countryside Service (SHCCS) |
| Mr K Chell | Field Studies Council (FSC) - Slapton Ley |
| Mr J Coombes | River Avon Fishing Association |
| Mr G Cumming | Local Industry |
| Mrs S Goodfellow | Dartmoor National Park Authority (DNPA) |
| Mr J Longworth-Kraff | National Trust (NT) |
| Mr N Mortimer | South Hams Marine Conservation Officer |
| Mr D Peters | Local Farmers / National Farmers Union (NFU) |
| Mr S Day | English Nature (EN) |
| Mr J Smith | Devon Avon Riparian and Fishery Owners Association |
| Mr S Tooke | Salcombe Harbour Authority (SHA) |
| Mr C Trant | Local Fish Farmers |
| Mr M Williams | South West Water (SWW) |

3.4 Working With Others

We can only deliver long-term environmental improvement by working with others, building partnerships with those who share common objectives, and developing links to the community.

Local Agenda 21 - This is the global action plan endorsed at the United Nations Conference on Development and the Environment in 1992. It is designed to achieve sustainable development within all levels of our society.

Within the catchment, local authorities are assisting local communities to develop strategies and action plans for sustainable development. South Hams District Council has supported an independently produced Agenda 21 Plan⁵. This includes a series of recommendations for action that will act as a signpost for organisations and individuals to follow. Dartmoor National Park Authority endorse the *Statement on National Parks, Sustainability and Work on Agenda 21*; this statement provides a commitment to the pursuit of sustainability and Local Agenda 21 (LA21) and forms the basis for future action.

Development Plans - These are produced by Local Authorities to guide the way land is developed. We have limited control over the development of land, but we provide advice and guidance to Local Authorities and work with them to develop policies that minimise the impact of development of the environment.

Non-Statutory Plans - We work with a number of other organisations to develop partnerships and collaborative projects. The LEAP is one of a number of separate, but related environmental initiatives that aim to protect and management the environment. Other non-statutory plans include:

- The Nature of Devon: A Biodiversity Action Plan (BAP)⁶
- The Nature of Dartmoor: A Biodiversity Profile⁷
- Devon Local Agenda 21 Network Issues Report⁸
- South Devon Area of Outstanding Natural Beauty Management Plan⁹
- Lyme Bay and South Devon Shoreline Management Plan¹⁰

3.5 Environmental Strategy

Our principal and immediate environmental concerns are stated in our national strategy¹¹ and relate to nine themes. They are:

-  Theme 1 Addressing climate change
-  Theme 2 Improving air quality
-  Theme 3 Managing our water resources
-  Theme 4 Enhancing biodiversity
-  Theme 5 Managing our freshwater fisheries
-  Theme 6 Delivering integrated river-basin management
-  Theme 7 Conserving the land
-  Theme 8 Managing waste
-  Theme 9 Regulating major Industry

We will deliver this strategy at a local level by dialogue between ourselves and the various organisations involved in the protection and management of the environment.

4 OVERVIEW OF THE CATCHMENT

This plan covers the adjoining catchments of the Rivers Avon and Erme. The Avon catchment includes those watercourses draining to Start Bay and to the Salcombe and Kingsbridge Estuary.

The Rivers Avon & Erme both rise on South Dartmoor within about one mile of each other, at a height of over 400 meters above sea level. Dartmoor is an upland granite mass; comprising open moorland with high rainfall and acid, peaty soils. Much of Dartmoor is used for extensive grazing by cattle, sheep and ponies. As the rivers flow from the open moorland they have created steep-sided valleys. Major tributaries of the River Avon (The Bala Brook and The Glaze Brook) and the River Erme (Lud Brook) have their sources on the moor.

The boundary of Dartmoor National Park is marked by the A38, which also serves as a boundary between the granite mass and the relatively low lying but undulating area known as the South Hams. The South Hams is noted for its rich red soil which supports more intensive livestock and arable farming. Slapton Stream and the Gara both have their sources in this area.

The Salcombe Kingsbridge, Avon and Erme estuaries are a major part of the landscape of this catchment. These are rias (drowned river valleys) which have a very different feel to the bar-built estuaries of the East and North Devon. Woodland fringes come down virtually to the high tide line, and areas of saltmarsh or grazing marsh are quite restricted. Along the coast to the west of Start Point are several small areas of fairly flat land with steep cliffs down to the sea. Behind the shingle ridge, which runs from Torcross to Strete, lies Slapton Ley, the largest natural freshwater lake in the South West.

Industry in the catchment, apart from agriculture and tourism, is limited. The Salcombe and Kingsbridge estuary and Dartmoor National Park attract large numbers of visitors, especially in the summer months.

The Upper reaches of the River Avon are intercepted by the Avon Reservoir, which provides water for public supply to the South Devon area. There are additional public water supply abstractions on the Bala Brook and the River Erme.

Key Statistics for the Avon & Erme Catchment:

| | Avon | Erme |
|--|------------------------|------------------------|
| Area of Catchment | 341.25 km ² | 107.75 km ² |
| Length of Monitored River in the Catchment | 67.10 km | 28.90 km |
| Average Annual Rainfall | 1533.66 mm | |
| Approximate Population (1991) | 24,000 | 13,000 |
| Administrative areas | West Devon, South Hams | |

4.1 1998 Compliance with River Quality Objectives (RQO)

River Quality Objectives are our targets for water quality. The system is described in both the Action Plan² and the Consultation Report¹.

For this review we have looked at how current water quality compares with targets published in the Action Plan². We used data collected over 3 years, between 1996 and 1998, this is called *The 1998 River Ecosystem (RE) Compliance Assessment*, and is shown on Map 2.

A comparison with the 1997 RE Compliance Assessment used in the Action Plan² shows that water quality has improved in three stretches listed below:

River Avon; Shipley Bridge to Horsebrook (two stretches) now both comply with their RQO of RE1.

River Erme; Fawns Bridge to Normal Tidal Limit now complies with its RQO of RE2.

Water quality in four stretches detailed below has shown no RE class improvement:

The South Grounds Stream from source to Slapton Ley inflow.

This stretch marginally failed to comply with its RQO of RE1 as a result of elevated Biochemical Oxygen Demand (BOD). These results were accompanied by elevated ammonia levels. The cause of this poor water quality is unknown, but our results suggest an impact from the village of Slapton (see New Action 15a).

The Small Brook from source to the Normal Tidal Limit - significantly failed to comply with its RQO of RE1 as a result of elevated BOD occurring on two occasions. These results were accompanied by elevated ammonia levels and were linked to rainfall events. The most likely cause of this poor water quality is diffuse agricultural pollution.

The River Avon from Horsebrook to the Normal tidal Limit (2 stretches) - These stretches marginally failed to comply with their RQOs of RE1 as a result of elevated BOD. These results were accompanied by elevated ammonia levels and were linked to rainfall events. The most likely cause of this poor water quality is diffuse agricultural pollution.

The Gara from source to Higher North Mill marginally failed to comply with its RQO of RE1 as a result of elevated BOD, occurring on four occasions. The cause of this failure is not known (see New Action 15a)

In certain circumstances, we can "set aside" data, that is we will not take into account some or all the results for a particular determinand when we assess compliance with RQO. We may "set aside" data where high concentrations of metals or low pH values are predominantly caused by the natural geology of the catchment. This allows us to protect good water quality shown by other determinands in the RE classification. The headwaters of the Avon & Erme catchment rise on Dartmoor, where the underlying granitic rocks result in very acidic soils. This, combined with the slight natural acidity of rain water, can result in lowered pH in these watercourses. This in turn can result in lowered pH in the watercourses. The provision for pH to be set aside in the River Avon, from Avon Reservoir to Shipley Bridge, and the entire Bala Brook has been used in the 1998 compliance assessment.

Issue 1: Effluent Discharges

We regulate the disposal of effluent by issuing consents to control discharges, including treated sewage and industrial wastes. Rivers and coastal waters can naturally render the main constituents of many effluents harmless and with proper controls over effluent disposal the environment will not be harmed.

We aim to maintain and, where appropriate, improve the quality of water. We achieve this by setting water quality targets for the catchment based on RQOs to protect recognised uses, standards laid down in EC Directives and international commitments.

A number of SWW sewage discharges are known to cause or contribute to the exceedence of water quality targets. These discharges will be improved through the Water Companies' investment programme for the period 2000-2005. This is known as Asset Management Plan 3 (AMP3). AMP3 has been developed along guidelines agreed between the Environment Agency, the Department of the Environment, Transport and Regions (DETR) the water services companies and the Office of Water Services (OFWAT).

We have agreed with DETR which sewage discharges require improvement during AMP3. OFWAT has now completed a review of water prices, which allows for this programme of environmental investment and enables the companies to make the environmental improvements by 2005. Many of these schemes will be delivered before 2005.

The main drivers for improvements are two EC Directives; the Urban Waste Water Treatment Directive¹² (UWWTD) and the Shellfish Waters Directive¹³ (SWD). The UWWTD requires minimum standards for effluent from populations above a certain size. The SWD sets standards to protect shellfish from the discharge of polluting substances and includes a guideline standard for bacteria in shellfish flesh, which is included to protect public health. Following a consultation exercise by the DETR on whether waters, including sites in the Avon and Salcombe and Kingsbridge estuaries, should be designated under this Directive, the Government announced, on 8 July 1999, a revision of designated EC Shellfish Waters. As a result, an area of the Avon estuary and an area of the Salcombe estuary have been designated as shellfish waters (see Appendix 2). We are responsible for controlling discharges to ensure the requirements of the Directive are achieved.

These designations ensure that the Shellfish Hygiene Directive¹⁴ and the Shellfish Water Directive are now running in parallel, and their key aims of consumer protection and environmental protection will now complement and reinforce each other.

Table 1: Improvements to Major Discharges to be carried out under AMP3.

| STW | Required Treatment Level | Investment Driver |
|--------------------------|---|----------------------------------|
| Kingston | Storm tank improvements | UWWTD |
| | Improved secondary treatment | Protection of downstream RQO |
| Woolston | Secondary treatment | UWWTD |
| | Further improvements | Protection of downstream RQO |
| Brownston | Secondary treatment | UWWTD |
| West Charleton | Storm tank improvements | UWWTD |
| | Improved secondary treatment | Protection of downstream RQO |
| | Ultraviolet (UV) disinfection | SWD |
| | Reduction in storm discharges | SWD |
| Frogmore and Chillington | UV disinfection | SWD |
| Stoke Fleming (North) | Primary treatment | UWWTD |
| Stoke Fleming (South) | Primary treatment | UWWTD |
| Torcross | Secondary treatment | UWWTD |
| Holbeton | Secondary treatment | UWWTD |
| | UV disinfection | Bathing Waters Directive |
| Galmpton (Hope Cove) | Storm tank improvements | UWWTD |
| | UV disinfection | Bathing Waters Directive |
| Strete | Outfall improvements | UWWTD |
| Ivybridge | Storm tank improvements | UWWTD |
| Aveton Gifford | UV disinfection and reduction in storm discharges. | SWD and Bathing Waters Directive |
| Kingsbridge (Gerston) | UV disinfection and reduction in storm discharges. | SWD |
| Slapton | Effluent phosphate reduction (depending on outcome of investigations) | To protect a SSSI. |
| Blackawton | Effluent phosphate reduction (depending on outcome of investigations) | To protect a SSSI. |

In addition to these improvements shown in Table 1 we expect a number of combined sewer overflows (intermittent discharges) suspected of impacting Shellfish Waters in the Avon and Erme catchment will be improved in AMP3 to comply with the Shellfish Waters Directive.

The following tables give updates for the actions from the Avon & Erme LEAP for the year 1998/1999.

| No. | Action | Lead/ Other | Start | End | Cost | Progress |
|---|--|----------------|----------|----------|------|--|
| Effluent Discharges | | | | | | |
| 1a ♦  | Improvements to be carried out under UWWTD to Holbeton STW (by 2005). | SWW, Agency | 01/12/98 | 31/03/05 | n/a | Improvements to be made to Holbeton, with the provision of secondary treatment, and UV disinfection under the AMP3 programme. |
| 1b ♦  | Liaise with Centre for Environment, Fisheries and Science (CEFAS) to obtain more detailed information on the bacterial quality of shellfish. | Agency | 01/12/98 | 31/03/03 | <1k | We continue to liaise regularly with CEFAS. Sites in the Salcombe & Kingsbridge and Avon estuaries are monitored by the Agency for the Shellfish Waters Directive. |

| No. | Action | Lead/ Other | Start | End | Cost | Progress |
|---|--|---|----------|----------|------|---|
| 1c  ◆ | Investigate cause of poor biological water quality in the Bala Brook. | Agency | 01/12/98 | 31/03/00 | u/k | Samples were collected in the Spring and Autumn of 1999, and these have been analysed. The data is being collated and should be available in March 2000. |
| 1d  ★ | Carry out investigation to determine the effect of unsatisfactory septic tank discharges on the Buckland Stream. | Agency | 01/04/99 | 31/03/00 | u/k | Our investigation found that septic tank discharges are impacting on the biological quality of the Buckland Stream. A final report is due in spring 2000. |
| 1e  ◆ | Continue discussion between SHDC, Parish Councils, SWW Ltd and the Agency regarding improvements to sewage discharge at Buckland. | Owners / Occupiers, Parish & District Councils, SWW, Agency | 01/12/98 | 31/03/03 | <1k | We will be meeting with relevant parties when the final report of our investigation is completed in Spring 2000. |
| 1f  ◆ | Continue to seek restrictions on development in areas where sewage treatment is inadequate and pursue improvements to such discharges. | Agency, SWW | 01/12/98 | 31/03/03 | u/k | We continue to do this as part of our routine activities. |
| 1g  ◆ | Investigate options for resolving environmental impact of Beeson STW. | Agency, SWW | 01/04/99 | 31/03/03 | u/k | An embargo on development is in place at Beeson STW - we are currently reviewing the impact of Beeson STW to determine if the embargo is still appropriate. |
| 1h  ★ | Investigate impact of Didworthy STW on the River Avon and seek improvements to the discharge. | Agency, SWW | 01/12/98 | 31/03/99 | <1k | Improvements to the discharge have been made including installation of secondary treatment. The STW now performs well within its consent. |
| 1i  ◆  | Investigate nutrient loading from Slapton and Blackawton STWs and seek any required improvements in AMP3. | Agency, EN, SWW | 01/04/99 | 31/03/03 | u/k | Chemical monitoring is ongoing; funds have been set aside in AMP3 to carry out detailed investigation of impacts from these works. Dependant on the outcomes of these investigations, nutrient reduction may be required at Slapton and/or Blackawton STWs. |

Issue 2: Agriculture

Over the last ten years; there have been significant improvements by farmers in farm waste storage facilities and disposal methods. This has resulted in a marked reduction in the number of point source pollution incidents attributed to farming and has contributed to an overall improvement in water quality. Work still needs to be done to solve the problem of diffuse pollution. Guidance to farmers is provided by the Ministry of Agriculture Fisheries and Food (MAFF)¹⁵.

Agricultural activities impact on the environment in several ways. A decline in the quality of blanket bog and valley mires on Dartmoor may be due to agricultural damage. Heather moorland is declining due to changes in management and more intensive agricultural practices. Eutrophication, caused by

nutrients such as nitrate and phosphates entering aquatic ecosystems, is leading to an increase in growth of certain aquatic plants and algae. Significant loss of top soil from sloping arable land in the Gara subcatchment, resulting in sedimentation, is leading to loss of wetland habitat at Slapton Ley, and severe siltation of brown trout spawning gravels. Diffuse agricultural pollution also causes failures of River Quality Objectives.

On 1 April 1999, the new Groundwater Regulations came into force, which requires anyone who disposes of certain substances (List I and List II substances) to land to hold a licence. This will primarily affect people in this catchment who carry out sheep dipping.

| No | Action | Lead/ Other | Start | End | Cost | Progress |
|---|--|--|----------|----------|---------------------|--|
| Agriculture | | | | | | |
| 2a ★  | Target the South Hams coastal area for an intensive campaign promoting Farm Waste Management Plans (FWMPs). | MAFF, Agency | 01/12/98 | 31/03/00 | n/a | This Agricultural Development Advisory Service (ADAS)/MAFF initiative was well received by the industry in this target area. Approximately 70% of the participating farmers reported that the development of a FWMP would lead to a significant change in the way manure was handled. |
| 2b ★  | Review results of monitoring of the River Erme from Fawn's Bridge to the Normal Tidal Limit to see if RQO failures recur and take action as appropriate. | Agency | 01/04/99 | 31/03/00 | <1k | This stretch met its RQO of RE1 in 1998, no further action is required. Monitoring is ongoing. |
| 2c +  | Investigate the cause of poor water quality in the South Grounds Stream. | Agency | 01/04/00 | 01/04/01 | | This action now forms part of action 1j. Progress will be reported on in the next Annual Review. |
| 2d ★  | Modify Habitat Scheme (Water Fringe option) to encourage greater uptake in the Gara and Start catchments | Agency, MAFF, FRCA, EN, FSC | 01/12/98 | 31/03/03 | <1k | The Habitat Scheme was reviewed by the FRCA. Its success was mixed and many farmers regarded it as too restrictive. Successful elements of the scheme; the salt-marsh creation and raised water level options will be incorporated into the Countryside Stewardship Scheme. Existing agreements under the Habitats Scheme will continue until their natural end. |
| 2e ★  | Consider need to investigate sources of sediment to the Salcombe and Kingsbridge Estuary. | Agency, Marine Conservation Officer, EN | 01/04/99 | 31/03/00 | u/k but high. | There is no current evidence that sediment is impacting on habitat or species in the Salcombe and Kingsbridge Estuary. We will undertake a historical review of data to assess the extent and significance of the problem. Any investigation will depend on the outcome of this study. |
| 2f ◆  | Conduct research into sediment intrusion into salmon redds and sources of sediment and use results to help prioritise remedial work. | Exeter University, National Environment Research Centre | 01/12/98 | 31/03/03 | 5k | Being progressed as part of a National Research and Development (R&D) Project. |

| No | Action | Lead/ Other | Start | End | Cost | Progress |
|--|---|--|----------|----------|------------|--|
| 2g ★  | Continue gravel rehabilitation work to remove the build-up of silt and re-establish the gravels for salmonid spawning. | Agency, Fishing assoc. | 01/12/98 | 31/03/03 | 2k p.a. | Gravel rehabilitation undertaken at several sites on the River Avon in Autumn 1999. Spawning areas are assessed annually to determine the need for rehabilitation. There are no sites of concern on the Erme. |
| 2h ♦   | Promote measures to reduce excessive bankside erosion (e.g. fencing, tree planting and coppicing) where appropriate. | Agency, Landowners , fishing interests | 01/12/98 | 31/03/03 | u/k | Ongoing promotion by field staff. Members of the River Avon Fishing Association have also carried out fencing and coppicing on the Avon. |
| 2i ♦  | Encourage farmers to use appropriate Best Management Practices for control of soil erosion | Agency, MAFF, FRCA, NFU, Country Landowners Association (CLA) | 01/12/98 | 31/03/03 | u/k | A new set of leaflets have been devised, which concentrate on the economic benefits of best practice. They have been designed with the help of farmers. 1000 trial packs have been sent to farmers, with feedback forms provided. Following this trial the leaflets will be amended and distributed more widely. |
| 2j ♦  | Review results of erosion mapping survey to be carried out by Oxford University and use results to help prioritise remedial work. | Agency, Oxford University FSC | 01/04/99 | 31/03/01 | <1k | Survey work is ongoing. |
| 2k ♦   | Explore opportunities for the application of beneficial agri-environment schemes (Environmentally Sensitive Area (ESA), Countryside Stewardship, etc) at relevant locations | MAFF, FRCA, Agency | 01/12/98 | 31/03/03 | <1k | We aim to encourage the uptake of these schemes wherever possible as part of our routine activities. We have successfully lobbied government for an increase in funding for these schemes, which will speed agricultural reform to benefit the environment. |
| 2l ★  | Dependant on the findings of the Exmoor pilot scheme, investigate the presence of synthetic pyrethroids (SPs) in Dartmoor streams | Agency | 01/04/99 | 31/03/00 | u/k | We carried out a pilot study in 1998, on Exmoor in the upper tributaries of the Exe catchment, to investigate the potential impact from the use of SP sheep dips. Initial assessment of the data has found no evidence of an impact from these substances on invertebrate life in these watercourses. Any problems in this catchment will be identified when routine biological sites in the Avon & Erme catchment are surveyed in 2000. |
| 2m ★   | Implement new groundwater regulations to control use and disposal of sheep-dip (SPs). | Agency | 01/04/99 | 31/03/03 | u/k | The Groundwater Regulations came into force on 1 January 1999 and are being implemented. |

Issue 3: Development

Development in the catchment is largely restricted to the towns of Kingsbridge, Salcombe and in particular, Ivybridge. This issue addresses identified current and potential future problems associated with development in the catchment, which are of direct interest to the Agency.

Development in inappropriate areas and with insufficient safeguards can cause environmental damage and developments within floodplains can significantly increase flood risk. However, careful developments can bring benefits, for example through the clean up of contaminated land and re-use of old buildings. We are a statutory consultee on development plans and certain categories of planning application. This allows our views to be considered by the council prior to a planning application being decided or policies in a development plan being approved. Where environmental damage will occur, mitigation can be sought through the planning process. The precise nature of contaminated land in the catchment is not fully known. When the contaminated Land Regulations are introduced local authorities will be required to identify contaminated land within their area, and it will then be necessary to decide what remedial work is required.

It is preferable to avoid increased flood risk through development control than to have to carry out works to alleviate problems once they occur. We therefore advise planning authorities on development and flood risk matters, in order to assist them to ensure that wherever possible development does not occur in the floodplain. We shall continue to oppose all developments that would exacerbate flooding until satisfactory mitigation works are implemented.

Anybody who wants to receive flood warnings should contact us on FLOODLINE 0845 9 88 11 88. Leaflets are available which give information on the current service provided and information on flood warnings in force at any time.

| No | Action | Lead/ Other | Start | End | Cost | Progress |
|---|---|---|----------|----------|-------------|--|
| Urban Development | | | | | | |
| 3a ♦  | Work with local planning authorities to ensure that policies to protect the environment from pollution are included in Local Plans. | Agency, SHDC, DNPA | 01/12/98 | 31/03/03 | <1k p.a. | We continue to do this as part of our routine activities. |
| 3b ♦  | Work with others to reduce impact on water quality in the River Erme from drainage from construction. | Agency, Develop- ers, SHDC | 01/12/98 | 31/03/03 | u/k | Meetings have been held with site agents and managers at construction sites in order to reduce the impact of suspended solids run-off. This issue is likely to be on-going, particularly as further development takes place in the Ivybridge area. |
| 3c ♦  | Encourage local authorities to incorporate conditions in planning permissions which reduce the risk to the environment from construction. | Agency, SHDC, DNPA | 01/12/98 | 31/03/03 | <1k p.a. | We continue to do this as part of our routine activities. |
| 3d X    | Produce database on contaminated land sites in the catchment and ensure there is effective consultation with local authorities regarding contaminated land sites. | SHDC, West Devon Borough council (WDBC), Agency | 01/12/98 | 31/03/03 | u/k | This work has not been progressed due to the delays in the introduction of the contaminated Land Regulations, which are now expected to be introduced in April 2000. |

| No | Action | Lead/ Other | Start | End | Cost | Progress |
|--|---|--|----------|----------|------|---|
| 3e ♦   | Consult and liaise with planning authorities regarding 'Level B' studies and provide floodplain mapping information as it becomes available (S105 Water Resources Act 1991) ¹⁶ . | Agency, SHDC, DNPA | 01/12/98 | 31/03/03 | u/k | No Level 'B' studies have been undertaken in the Avon & Erme catchment. At present these studies are progressing in areas where flood risks are high and the information is required for planning purposes. No such sites occur within the catchment, although studies may be carried out in the future when resources are available. |
| 3f ♦  | Agree programme for works at Slapton Ley to alleviate flooding of Torcross. | SHDC, Devon County Council (DCC) Agency, FSC, EN | 01/12/98 | 31/03/03 | u/k | SHDC are reviewing the situation at present. |
| 3g ★  | Produce Shoreline Management Plan (SMP) for South Devon coastline taking full account of the importance of the shingle bank. | Agency, Lyme Bay and South Devon Coastal Group | 01/12/98 | 31/03/99 | 36k | SMP produced and adopted by Operating Authorities in 1999. SMP will be updated every 5 years. In the intervening time there will be data collection, monitoring and further studies leading to the development of the SMP. |

Issue 4: Barriers to Fish Migration

There are 34 weirs and other obstacles in the Avon and Erme catchment, some of which are complete barriers to the migration of salmon and trout. On many of the weirs the modifications required to improve fish migration are very expensive, and we have limited funds to carry these out. We rely on contributions from others to achieve them.

There are some river abstractions in the catchment, which create problems for the downstream migration of smolts. Installing screens at the intakes for these abstractions alleviates the problem and recent legislation makes it a requirement for many abstractors to install screens to our satisfaction by 1 January 1999. Where major works are required, additional time has been given.

Obstructions in the Avon Catchment include; the Avon Dam, a complete barrier with the cost of installing a fish pass considered prohibitively high; the Newhouse Fishing Lake Dam, where minor obstructions were modified by owners in 1995; and the Lower and Higher Glazebrook Weirs, which inhibit migration under low flows and where low cost modifications would be beneficial. Curtisknowle weir is a man-made rock weir and is used for abstraction to the Newhouse Fishery trout rearing ponds. In low flows, it forms an obstruction to sea trout. Deterioration of the weir is reducing this obstruction and we have investigated concerns that unauthorised works have taken place to re-instate the weir.

As a result of the installation of several fish passes on the Erme in recent years, migrating fish now have free access to the headwaters of the main river.

| No | Action | Lead/ Other | Start | End | Cost | Progress |
|---|--|-----------------------------|----------|----------|------|--|
| Barriers to Fish Migration | | | | | | |
| 4a ♦  | Make abstractors aware of problems caused by inadequate screening and ensure screens are installed to Agency satisfaction and timetable. | Agency, Abstrac- tors | 01/12/98 | 31/03/03 | u/k | The Agency is working with abstractors in the catchment. Extra time has been allowed where excessive costs are involved. |

| No | Action | Lead/ Other | Start | End | Cost | Progress |
|---|--|---|----------|----------|------|---|
| 4b ♦  | Modify man-made barriers in the system to permit fish passage. | Agency, fishing assoc., Riparian Owners (RAs), others | 01/12/98 | 31/03/03 | u/k | There are no man-made barriers of significant concern within the catchment at present. |
| 4c ♦  | Investigate and resolve unauthorised reinstatement works at Curtisknowle Weir. | Agency | 31/03/00 | 31/03/01 | u/k | Work is due to commence in summer 2000 on low-cost alterations to the weir, including the provision of an informal fish pass. |

Issue 5: Additional Threats to the Salmonid Fishery

Many of the factors which influence numbers of migratory fish (salmon and sea trout) returning to the river to spawn fall outside our statutory responsibilities; for example, distant water fisheries and the Irish drift net fishery. This places particular importance on measures adopted locally to maximise the number of fish returning to spawn, and to ensure that conditions in the river system are favourable for successful spawning and survival. We will continue to campaign for a reduction in high seas netting, particularly the Greenland, Faroes and Irish Drift Net Fisheries.

We intend to develop Salmon Action Plans for the Rivers Avon and Erme in the financial year 2000/2001. Each plan will examine the salmon fishery in detail and set fishery targets and fishing effort controls (where appropriate) and outline a programme of improvement.

As part of our routine work we have carried our gravel rehabilitation on the Murrige Stream (River Avon). Collaborative work with the River Avon Fishing Association this year involved coppicing at Curtisknowle and fencing near Knapps mill to manage cattle access to the river and reduce bank erosion.

The results of a four-year research programme into the impact of fish eating birds have been recently published. The MAFF, DETR and selected organisations will meet soon to establish whether the current government policy needs to be revised in light of the reports findings. Following this decision, we will be in a position to determine our approach to the recommendations made in the report.

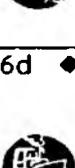
| No | Action | Lead/ Other | Start | End | Cost | Progress |
|--|---|----------------|----------|----------|------|---|
| Additional Threats to the Salmonid Fishery | | | | | | |
| 5a X  | Develop Salmon Action Plan. | Agency | 01/04/01 | 31/03/03 | 5k | Will be started in 2001/2002. |
| 5b X   | Seek designation of additional stretches of river under the EC Freshwater Fish Directive (ECFFWD) ¹⁷ . | Agency, DETR | 01/12/98 | 31/03/00 | <1k | The Agency sought designation of the additional stretches, but DETR will not consider any further designations. |
| 5c ♦  | Continue research into the effects of fish-eating birds. Disseminate findings of research and develop actions if appropriate. | Agency, MAFF | 01/12/98 | 31/03/01 | u/k | Final report produced. Agency policies to be produced following Government guidance. |

Issue 6: Waste Management Activities

The National Waste Strategy¹⁸ 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 sets out the following hierarchy of options for the management of waste: reduce, re-use, recover, and dispose.

We are keen to promote the reduction of waste at source; a project was run in South Devon as part of a wider initiative covering the whole county. The aim is to minimise waste generated by local companies. The scheme is driven by the PAYBACK business environment association in partnership with Business Link and the Environment Agency. New legislation aims to make those that produce waste more responsible for how it is managed. The Producer Responsibility Obligations (Packaging Waste) Regulations 1997¹⁹ came into force on 6 March 1997. This requires certain companies who handle packaging to ensure that a percentage is recovered and recycled. In the future, producer responsibility is likely to be applied to other waste streams.

Many older landfill sites have the potential to cause pollution since fewer pollution control measures were built into their original design. Stricter controls on landfill operations and the introduction of the Landfill Tax have begun to shift the balance in favour of alternative means of waste management. Uncontrolled and illegal tipping of waste, known as fly tipping, can pose hazards to wildlife, may pose a health risk and can cause pollution as well as ruining the appearance of an area.

| No | Action | Lead/ Other | Start | End | Cost | Progress |
|---|--|--|----------|----------|------|---|
| Waste Management Activities | | | | | | |
| 6a ★  | Support PAYBACK/Business Link initiative to reduce waste at source. | PAYBACK Business Link, Agency, DCC, SHDC, Teignbridge District Council (TDC), Torbay Council (TC) | 01/12/98 | 31/03/99 | 10k | The South Devon Waste Minimisation Group involved 10 businesses and Local Authority participants, all of whom were able to identify means of reducing the amount of waste produced. Further groups are planned for 2000. |
| 6b ★  | Provide advice to those companies affected by the Producer Responsibilities Obligations. | Agency | 01/12/98 | 31/03/03 | <1k | Advice has been given to companies contacting the Agency about Producer Responsibility Obligations, this forms part of the routine work of the Agency, and will not be reported on in future Annual Reviews. |
| 6c ★  | Investigate closed landfill sites and take appropriate action. | Agency LAs | 01/12/98 | 31/03/99 | <1k | We are concentrating our efforts on 18 sites owned by DCC. We have worked with DCC to prioritise the sites according to their risk to the environment. The site at Molescombe is one of the sites on this list (see Action 6d). |
| 6d ◆  | Liaise with the Waste Disposal Authority (WDA) to provide a system of control of migration of landfill gas from Molescombe tip, and ensure a comprehensive monitoring and restoration plan is implemented. | Agency, WDA | 01/12/98 | 31/03/03 | <1k | We have been working with DCC (the WDA) to monitor landfill gas at the site. A comprehensive monitoring and restoration plan may be developed when DCC have prioritised their sites. |

| No | Action | Lead/ Other | Start | End | Cost | Progress |
|---|--|--|----------|----------|------|---|
| 6e ★  | Investigate any new information relating to fly-tipping at a site at Chillington and seek to prosecute offenders if possible. | Agency | 01/12/98 | 31/03/99 | <1k | There has been no new information on the site. The problems of fly-tipping have received media coverage, and there has been a marked decrease in the amount of waste fly-tipped at this site. The site owner has also improved fencing at the site. |
| 6f ♦  | Investigate options for cleaning up Chillington site with owner, Parish/District Councils. | Agency, site owner, Parish & District Councils | 01/12/98 | 31/03/01 | u/k | We have contacted several organisations including DCC, SHCCS and a local scrap yard operator with a view to securing funding and practical assistance to tidy the site. We hope to do the work in Summer 2000, if funding is still available. |
| 6g ★  | Publicise the problem of fly-tipping to encourage the public to give information about suspected illegal waste tipping and to discourage them from tipping waste outside Civic Amenity Sites when they are closed. | Agency | 01/12/98 | 31/03/00 | u/k | The situation at Ivybridge Civic Amenity Site has improved following the move to seven day opening. |

Issue 7: Water Abstraction

We aim to ensure that there is enough water available for public and private water supply now and in the future, ensuring an appropriate balance between the needs of the environment and those of the abstractors.

Overall, the catchment is not stressed by abstraction; however, there are some areas where abstraction for public water supply is considered to have a local impact. The extent to which demand for public potable supply will increase in the future will depend on number of factors including population growth, numbers of new dwellings, personal use of water, level of economic activity, measures to reduce demand and climate change.

Low flows in watercourses can affect wildlife and fisheries and can exacerbate water quality problems due to reduced dilution. Most of the flow in the catchment is derived from surface water, and as a result river flows drop markedly during prolonged dry periods. This can have a number of effects particularly on the salmonid fishery by causing spawning gravels to dry up and by restricting salmonid migration, either through failing to stimulate fish to migrate, preventing their passing through obstacles on the river, or by trapping fish in isolated pools. The most vulnerable reaches are below Harford Moor intake weir on the Erme, and below the Avon Dam.

| No | Action | Lead/ Other | Start | End | Cost | Progress |
|--|---|----------------|----------|----------|------|---------------------------------------|
| Water Abstraction | | | | | | |
| 7a ♦   | Investigate need and feasibility for increasing prescribed flow at Harford Moor intake. | Agency, SWW | 01/04/99 | 31/03/01 | n/a | Progress with this action is ongoing. |

| No | Action | Lead/ Other | Start | End | Cost | Progress |
|--|---|----------------|----------|----------|------|---------------------------------------|
| 7b ♦   | Investigate feasibility for increasing the compensation flow from Avon Reservoir. | Agency, SWW | 01/04/99 | 31/03/01 | n/a | Progress with this action is ongoing. |

Issue 8: Cryptosporidium

Cryptosporidium is a microscopic animal that can infect the gut of humans and other animals. One species *Cryptosporidium parvum* can cause Cryptosporidiosis, a disease that causes prolonged severe diarrhoea in humans. *C parvum* is thought to be widely present in the environment and may be found in cattle and sheep.

Occasionally outbreaks of Cryptosporidiosis occur in human populations, and the public water supply is often implicated. The risk of *Cryptosporidium* entering the water supply is thought to be greatest where there is a direct river abstraction, particularly in an agricultural catchment. There are two direct river abstractions used for public water supply, on the Bala Brook and in the headwaters of the River Erme.

In response to the increased awareness of the potential risk to public health posed by this organism a task group was formed in 1997 with representatives from SWW, Ministry of Agriculture Fisheries and Food (MAFF), Environmental Health Departments and the Environment Agency. This group assessed the risk of *Cryptosporidium* entering the public water supply in the South West and SWW are reviewing procedures for the spreading of sewage sludge in catchments with potable supplies such as this one. The Environment Agency, in conjunction with MAFF, are also promoting the Code of Good Agricultural Practices in the same catchments.

Issue 9: Air Pollution

Air pollution can damage flora, fauna and buildings and can adversely affect soil and water. Sources of air pollution include traffic, industrial processes and power generation. These sources may be present within or outside the catchment. Ambient concentrations of air pollutants are generally lower in the South West of England than in other parts of England and Wales, although local data is limited. The National Air Quality Strategy²⁰ requires local authorities to examine the air quality within their areas and, through a system of review and assessment, determine whether set standards and objectives for specific pollutants are likely to be met by 2005.

Dartmoor has an extremely rich lichen flora with a number of rare species, which are sensitive to atmospheric sulphur. There is concern that around the southern edge of the moor, there is a decline in these species and possibly in other lower plants, such as mosses. More information is required to establish the status of these sensitive communities in the catchment.

Moorland areas are typically acid due to the underlying geology and soils. The natural acidity of Dartmoor could be exacerbated by atmospheric acid deposition, the main components of which are deposition are sulphur dioxide and oxides of nitrogen. Coniferous forests can also increase the level of acid deposition due to the way the forest canopy 'scavenges' pollutants from the atmosphere, and the acidic compounds released when pine needles break down.

| No | Action | Lead/ Other | Start | End | Cost | Progress |
|---|---|--------------------|----------|----------|------|--|
| Air Pollution | | | | | | |
| 9a ♦  | Review air quality in the area, in line with National Air Quality Strategy. | SHDC, DNPA, Agency | 01/12/98 | 31/03/05 | n/a | SHDC have completed the Stage 1 Review and assesment of Air Quality in the South Hams, which involved an examination of traffic flows on principle roads, industrial and other |

| No | Action | Lead/ Other | Start | End | Cost | Progress |
|---|---|--|----------|----------|----------|---|
| | | | | | | sources. Within the catchment, pollutants identified for Stage 2 are: Carbon Monoxide (emissions from the A38), Nitrogen Dioxide (A38) and Particulates (A38). Stage 2 will involve more detailed examination of these pollutants, including simple modelling and monitoring for some. The Agency provided some data for Stage 1 and were consultees. |
| 9b ♦  | Improve knowledge of status of lichen communities sensitive to air pollution in the catchment. | EN, DNPA, Agency | 01/12/98 | 31/03/01 | u/k | Identified need in Dartmoor Biodiversity Action Plan. |
| 9c ♦   | Co-operate in development of clear air quality standards to protect key species. | EN, JNCC, Agency, DNPA | 01/12/98 | 31/03/03 | <1k p.a. | The Government recently reviewed the National Air Quality Strategy. We made representations to try to get a number of amendments made, including the inclusion of standards to protect vegetation. We were partially successful and the strategy now includes standards for sulphur dioxide and nitrogen oxides, specifically aimed to protect vegetation. However, the standards are not as stringent as we would like them to be, and they do not apply everywhere. We will make further representations in 2000 when the next review begins. |
| 9d ♦    | Conduct and support research to improve understanding of effects of airborne acidification and eutrophication on semi-natural habitats and species. | Universities, Agency, EN, DNPA, Institute of Terrestrial Ecology (ITE) | 01/12/98 | 31/03/03 | u/k | The effects of acidification are fairly well understood. This has led to a series of measures designed to reduce levels of sulphur dioxide. We are implementing a national programme to reduce SO ₂ levels 60% from a 1997 baseline by 2005. Nitrogen oxides contribute to acidification and eutrophication. Research is needed to understand the level and effects of airborne eutrophication. Nitrogen oxides are decreasing and implementation of the National Air Quality Strategy should ensure further reductions. |
| 9e ♦    | Ensure all proposals for forestry development within the areas of critical load exceedences receive an environmental impact assessment where appropriate. | Agency, Forestry Authority | 01/12/98 | 31/03/03 | <1k p.a. | We have received no proposals for forestry developments of this size, within the area. |

Issue 10: Biodiversity and Earth Science

Biodiversity, or the variety of life, is being lost. In the UK alone over 100 species have been lost this century. The global decline in Biodiversity was recognised at the Rio Summit in 1992, where over 150 world leaders signed the Biodiversity Convention. The convention requires each country to develop national plans for the conservation and sustainable use of biological diversity. The UK responded with Biodiversity Action Planning, which aims to reverse this decline by prioritising habitats and species for action, ensuring that conservation efforts are directed where they are most needed. In Devon, Biodiversity Action Planning also includes the conservation of important earth science features and processes.

Biodiversity: The UK Action Plan²¹ was published in 1994 and since then a number of regional and county plans have been produced^{6, 22}. The Action Plan for Dartmoor (in preparation) will be helpful in guiding actual work on the ground.

Many of the actions required from the Agency to protect species and habitats in the BAPs will be carried out as part of our routine work, e.g. ensuring that abstractions do not damage wetland sites. Only actions that are required in addition to our routine work are presented below.

10a: Loss / deterioration of key habitats and species in general.

Many of the habitats and species for which the catchment is still an important location have declined in their extent or abundance. The cause is often human activities, typically driven by economic factors, for example, incentives to improve agricultural production can lead to greater use of pesticides and fertilisers, and development can lead to fragmentation of habitat. River and wetland habitats are vulnerable not only to direct effects but also to activities elsewhere in the catchment.

We need to ensure that our input to strategic plans reflects our priorities. We also need to encourage uptake of schemes encouraging sustainable use of the catchment and to work with the scheme providers to make sure that incentives and management requirements are appropriate.

| No | Action | Lead/ Other | Start | End | Cost | Progress |
|---|---|--|----------|----------|------|---|
| Loss/deterioration of key habitats and species | | | | | | |
| 10a-a★   | Continue to develop the Biodiversity Action Planning process at regional, county and more local levels to establish priorities for wildlife and earth science conservation. | Agency, EN, Royal Society of the Protection of Birds (RSPB), SHDC, DNPA, DCC, Devon Wildlife Trust (DWT), others | 01/12/98 | 31/03/03 | 2k | We are involved with BAPs at all levels and actively report on any success / works done to the Devon Biodiversity Co-ordinator. |
| 10a-b◆    | Promote and implement action plans, particularly for those features, habitats and species which may be affected by our operational or regulatory activities. | Agency | 01/12/98 | 31/03/03 | 5k | See specific actions for particular habitat /species. |

| No | Action | Lead/ Other | Start | End | Cost | Progress |
|---|---|---|----------|----------|------|---|
| 10a-c♦    | Work with others to ensure prescriptions and payments, under agri-environment schemes such as ESA and Countryside Stewardship, are set so as to allow objectives to be met. | MAFF, FRCA, Agency, Land-owners | 01/12/98 | 31/03/03 | 2k | We have been consulted by MAFF on the Dartmoor ESA scheme and have commented to ensure aquatic interests are fully covered. |
| 10a-d♦    | Encourage uptake of agri-environment schemes, particularly where there are benefits for target features, habitats or species. | Agency, FRCA, Land-owners, managers, others | 01/12/98 | 31/03/03 | 1k | We aim to encourage the uptake of these schemes wherever possible as part of our routine activities. |

Targets:

- (i) Promote the uptake of ESA so that 80% of eligible land is under agreement by 2005.
- (ii) Outside the ESA area, 80% of all County Wildlife Sites larger than 5 hectares to be entered into management agreement, or other protective ownership, by 2005.

10b: Loss / deterioration of blanket bog.

Blanket bog is a scarce habitat for which Dartmoor is internationally important. It is found here at its southern-most location in Britain and there is little further south anywhere in Europe – much of it is no longer in a natural condition. Summer fires can damage moss species, including the internationally scarce *Sphagnum ibricatum*, and the extensive peat deposits, key earth science features due to their detailed record of past ecology, may shrink when the hydrology of the area is altered. Blanket bog is also at risk from acidification (see Issue 9).

SWW hold a licence allowing them to abstract water from Red Lake and Left Lake. There are concerns that these sites are hydrologically linked to the surrounding blanket bog, and that abstraction could dry out this wetland habitat. An area of Dartmoor that includes Red Lake and Left Lake has been designated as a candidate Special Area of Conservation (SAC) under the EC Habitats Directive²³. As a competent authority for this Directive we must review all existing authorisations and activities that we have licensed within SACs, including abstraction licences. Assessment of these abstractions will be completed by 2004, within the national review programme.

| No | Action | Lead/ Other | Start | End | Cost | Progress |
|---|--|---------------------------------------|----------|----------|---------|--|
| Loss/deterioration of blanket bog | | | | | | |
| 10b-a♦   | Increase public awareness of dangers of uncontrolled fires. | DNPA, Devon Fire Brigade, Agency | 01/12/98 | 31/03/03 | <1k | The Moorland Fires Liaison group has started an initiative to co-ordinate all fire plans in the National Park, and promote best practice in burning. |
| 10b-b♦    | Conduct research into effects of 'swaling' and changes to moorland vegetation on both catchment hydrology and nutrient leaching. | Plymouth University, EN, Agency, DNPA | 01/12/98 | 31/03/02 | 2k p.a. | We have been involved in a research project on Dartmoor, looking at the effects of swaling on catchment hydrology. |

| No | Action | Lead/ Other | Start | End | Cost | Progress |
|--|--|------------------------|----------|----------|------|---|
| 10b-c◆  | Promote and implement action plans for blanket bog and associated species from forthcoming Dartmoor BAP. | DNPA, EN, Agency, MAFF | 01/12/98 | 31/03/03 | 2k | We routinely advise where appropriate on methods of maintenance and enhancement of blanket bog. The Dartmoor BAP is due for publication by the end of 2000. |
| 10b-d◆     | Review all existing authorisations and activities that we have licensed within Dartmoor proposed SAC. | Agency, EN | 01/12/98 | 31/03/04 | <1k | We routinely advise where appropriate on methods of maintenance and enhancement of blanket bog under the Habitats Directive, we are reviewing those activities within the cSAC. |

Targets:

- (i) No further net loss of blanket bog.

10c: Loss / deterioration of valley mire.

Valley mire is a wetland habitat which occurs where waterlogged peats are found in valley bottoms. They support a number of key species, including the keeled skimmer dragonfly and scarce blue-tailed damselfly. Mires are at risk from drainage which not only disturbs the habitat generally but may also affect the particular needs of associated species. Valley mire is also vulnerable to acidification.

| No | Action | Lead/ Other | Start | End | Cost | Progress |
|---|--|---|----------|----------|------|---|
| Loss/deterioration of valley mire | | | | | | |
| 10c-a◆  | Promote and implement action plans for valley mire and associated species from forthcoming Dartmoor BAP. | DNPA, EN, Agency, MAFF | 01/12/98 | 31/03/03 | 2k | A pilot project for valley mire is being carried out on Exmoor and if successful may be carried out in other suitable areas. DNPA carried out a survey in 1998 aimed at locating further colonies of three nationally scarce damselfly species, Southern Damselfly, Small Red Damselfly and Scarce Blue-tailed Damselfly. Within this catchment there are two sites where Scarce Blue-tailed Damselfly are breeding, one on the Erme and one on the Avon. |
| 10c-b◆  | Support survey to determine dragonfly interest. | British Dragonfly Society, DNPA, Agency | 01/12/98 | 31/03/01 | <1k | Survey work by the British Dragonfly Society is ongoing. |

Targets:

- (i) No further net loss of valley mire.

10d: Loss / deterioration of upland heathland.

This nationally important habitat is found on much of the open moor which is not covered by blanket bog, and is dominated by dwarf shrubs, in particular heather and western gorse. The general decline in extent and quality of heather moorland is indicative of changes in management and more intensive

agricultural practices. Swaling (rotational burning of small areas of moorland to provide a flush of new growth for grazing) is a useful management tool when properly carried out, but frequent burning and/or heavy grazing tends to encourage purple moor grass at the expense of heath.

| No | Action | Lead/ Other | Start | End | Cost | Progress |
|---|---|---------------------------------|----------|----------|------|--|
| Loss/deterioration of upland heathland | | | | | | |
| 10d-a◆  | Promote and implement action plans for upland heathland and associated species from forthcoming Dartmoor BAP. | DNPA, EN, Agency, MAFF | 01/12/98 | 31/03/03 | 1k | We are looking at targets to prevent the loss of upland heathland to maintain current populations of red grouse and skylarks and to restore substantial areas of grass moor to heathland. This will be done through ESA agreements to control grazing and swaling. |

Targets:

- (i) No net loss of upland heath, where possible.
- (ii) Restore 20 hectares of degraded heath by 2005.

10e: Loss / deterioration of Rhos pasture.

Rhos pastures are species-rich purple moor grasslands with a very restricted distribution. On Dartmoor they are found in valley systems away from the open moor, usually in small fragments. Rhos pasture is particularly important for the marsh fritillary butterfly. Agricultural improvement or neglect are probably the greatest threats to this habitat and its associated species, but as with many wetland habitats changes such as the creation of ponds can lead to the loss of existing high quality habitat. The Agency and Dartmoor National Park Authority are embarking on a project of Rhos pasture enhancement in the Erme catchment; work being undertaken includes the provision of fencing to control grazing.

| No | Action | Lead/ Other | Start | End | Cost | Progress |
|---|--|---|----------|----------|------|---|
| Loss/deterioration of Rhos pasture | | | | | | |
| 10e-a◆  | Promote and implement action plans for Rhos pasture and associated species from DBAP and forthcoming Dartmoor BAP. | DNPA, EN, Agency, MAFF, Barn Owl Trust | 01/12/98 | 31/03/03 | 3k | Barn owl boxes have been erected and are being used by owls. We are keen to promote fencing in appropriate places to control grazing. |

Targets:

- (i) No net loss of Rhos pasture.

10f: Key catchment habitats and species associated with the freshwater environment.

Perhaps more than any other habitat, rivers are vulnerable to the effects of activities well away from the habitat itself, and reflect what is occurring over the whole catchment. The Avon and Erme support a range of species typical in Devon rivers, but no less valuable for that. Indeed, several of those species are particularly well represented in Devon, for example Otters.

In the past year, the number of otters killed on roads has increased, significantly affecting their spread into east Devon. The Agency is asking motorists to beware of otters straying on to roads, particularly during times of flooding, and we want people to report all injured or dead otters to us.

| No | Action | Lead/ Other | Start | End | Cost | Progress |
|--|--|-------------------------------------|----------|----------|------|--|
| Key catchment habitats and species associated with the freshwater environment | | | | | | |
| 10f-a◆  | Rivers and streams - implement flood plain policy, identify additional stretches of river bank that require active management to conserve or enhance wildlife, ensure Drought Orders and Permits do not compromise wildlife and ecology of watercourses. | Agency, SWW, DWT | 01/12/98 | 31/03/03 | u/k | The Devon BAP was lunched in June 1998. No Water Level Management Plans have been identified for this catchment. We aim to maintain and restore the quality and biodiversity of rivers and streams in Devon and the Avon & Erme catchment through our day to day activities. |
| 10f-b◆  | Freshwater reedbed - encourage development of sympathetic water abstraction policies and appropriate coastal zone management plans in order to protect existing reedbeds. | Agency, Marine Conservation Officer | 01/12/98 | 31/03/03 | u/k | We have put forward a bid for Heritage Lottery Fund money as part of the South Devon Area of Outstanding Natural Beauty (AONB) bid to manage South Milton Ley reedbed. |
| 10f-c◆  | Otters - promote and implement action plan for otters from Devon BAP, including continued post-mortem analysis and habitat reinstatement. | Agency, DWT, Riparian owners | 01/12/98 | 31/03/03 | 3k | The Devon BAP for otter has now been launched. We are continuing to carry out post-mortems to establish the current health of the population, in addition to a DNA study being carried out in conjunction with Exeter University - we are also carrying out habitat restoration schemes where appropriate. |

Targets:

- (i) Review and enforce waste/pollution regulations and discharge consents to control the spread of waste to land and reduce the pollution of watercourses, by 1999.
- (ii) Create 40 hectares of new reedbed, in blocks of at least 20 hectares, by 2010.
- (iii) Create 20 hectares of new reedbed on small sites across the country by 2010.
- (iv) Maintain existing populations of otter and expand use to all suitable areas of the catchment.

10g: Threats to key bird species.

Dippers have a western distribution and have been shown to be affected by acidification of streams. Their nest sites are often under bridges and therefore at risk from repairs or strengthening works. Sand martins and kingfishers use steep earth cliffs for their nest holes; changes to erosion patterns can result in a loss of suitable sites. We need to ensure our regulatory activities take account of all known sites, and we are working with others to improve the understanding of distribution.

| No | Action | Lead/ Other | Start | End | Cost | Progress |
|--|--|--|----------|----------|------|--|
| Threats to key bird species | | | | | | |
| 10g-a★   | Carry out county-wide survey of sand martin and kingfisher nest sites. | Devon Bird Watching and Preservation Society (DBWPS), Agency, volunteers | 01/12/98 | 31/03/99 | u/k | The county wide survey was completed in 1997. We have been provided with the data for Kingfishers, though are still awaiting a full report. There are currently no plans for a further survey. |

| No | Action | Lead/ Other | Start | End | Cost | Progress |
|--|--|---|----------|----------|------|--|
| 10g-b◆   | Support research to determine effects of acidification on dipper populations. | Agency, British Trust for Ornithology (BTO), Universities | 01/12/98 | 31/03/01 | <1k | Work by the BTO is ongoing. |
| 10g-c◆   | Record dipper nest sites. Pass information to county highways section in relation to bridge repairs. | Agency | 01/12/98 | 31/03/03 | <1k | The Agency is consulted on bridge repairs and advises the Highways Authority of known nesting sites. |

10h: Threats to key fish species.

Salmon are threatened by a range of activities. Actions for this species are covered in Issues 2, 4 and 5 of this Annual Review. Brook, river and sea lamprey and bullhead are also of conservation concern. However, information relating to the distribution and importance of these species in Devon is limited.

| No | Action | Lead/ Other | Start | End | Cost | Progress |
|---|--|----------------|----------|----------|------|--|
| Threats to key fish species | | | | | | |
| 10ha◆    | Improve knowledge of distribution and abundance of bullhead and lamprey species, ensuring lampreys are identified to species level in fisheries surveys. | Agency | 01/12/98 | 31/03/01 | <1k | Fisheries staff have been trained in species identification. |

10i: Threats to freshwater lagoon habitats.

Freshwater lagoons are a scarce habitat in the South West and almost the entire Devon resource is found in this catchment. Slapton Ley, the largest natural freshwater body in Devon, supports several species of conservation concern including Cetti's warbler, aquatic warbler, bittern and strapwort. There are serious concerns about the deterioration of the ecology of the Ley as a result of sedimentation and eutrophication since the 1950's (see Issues 1 & 2).

| No | Action | Lead/ Other | Start | End | Cost | Progress |
|--|--|---------------------------------------|----------|----------|---------|---|
| Threats to freshwater lagoon habitats | | | | | | |
| 10i-a×   | Investigate changes to flora and fauna of Slapton Ley through an agreed programme. | FSC, EN, Universities, Agency | 01/12/98 | 31/03/03 | u/k | No progress to date, there is a need to set up a working group to establish responsibilities. |
| 10i-b×   | Promote and support establishment of voluntary action group with input from statutory agencies to tackle recognised problems in the Ley through collaborative approach | EN, FSC, Agency, MAFF, FRCA, NFU, CLA | 01/12/98 | 31/03/03 | 1k p.a. | There has been no progress with this action to date. |

| No | Action | Lead/ Other | Start | End | Cost | Progress |
|--|--|-----------------|----------|----------|------|--|
| 10i-c★   | Establish/agree suitable habitat management to encourage the spread of strapwort around the Ley. | FSC, EN, Agency | 01/12/98 | 31/03/00 | 3k | We paid the FSC to repair Torcross weir, this will assist in controlling water levels, providing habitat suitable for strapwort. |

10j: Loss / deterioration of shingle bar habitats.

Shingle bars have both biological and earth science importance. The shingle bank at Slapton is part of the National Nature Reserve and has been identified as an internationally important site. There are several unusual species which are adapted to the harsh conditions which prevail and a clear transition can be seen across the bar. Both the plants and the physical feature are vulnerable to damage by recreational activities. Shingle bars are also vulnerable to changes in sediment processes. (The actions relating to this issue are addressed in Actions 3f and 3g).

10k: Threats to estuarine habitats.

Estuaries and their associated habitats support rich and diverse communities of intertidal and subtidal flora, invertebrate fauna and breeding and wintering birds. The Avon and Salcombe and Kingsbridge estuaries are at risk from a number of pressures including recreation, and works to protect property from wash or erosion or to facilitate access to and from the water. The designation of the Salcombe and Kingsbridge Estuary as a Local Nature Reserve and the development of a management plan under the guidance of the Estuary Conservation Officer will help to reduce the impact and to promote opportunities for enhancement.

| No | Action | Lead/ Other | Start | End | Cost | Progress |
|--|--|---|----------|----------|------|--|
| Threats to estuarine habitats | | | | | | |
| 10k-a×   | Promote and implement action plans for estuaries and associated habitats and species from Devon BAP | Agency, SHDC, Marine Conservation Officer, DWT, Land-owners | 01/12/98 | 31/03/03 | 2k | There has been no progress to date. |
| 10k-b◆   | Support initiatives to enhance fringing habitats (grazing marsh, reed swamp) around Salcombe and Kingsbridge Estuary. | Agency, SHDC, Marine Conservation Officer | 01/12/98 | 31/03/03 | 1k | We have been involved in discussions with the Salcombe and Kingsbridge Estuary officer to enhance the area of West Charleton Marsh and manage the reed bed there. This is taking place with local interest groups, Estuary Officer, EA and SHDC. |
| 10k-c◆   | Investigate possibilities for water level management, particularly on grazing marshes alongside the Avon and Erme estuaries. | Agency, EN, Land-owners | 01/04/99 | 31/03/01 | u/k | No opportunities have been identified to date. |
| 10k-d◆  | Support investigations to determine reasons for decline in number of swans on Salcombe and Kingsbridge estuary. | Agency, Marine Conservation Officer | 01/12/98 | 31/03/03 | 1k | Investigation is ongoing. |

10I: Threats to key plant species.

Two plant species occur in the catchment which are very localised in the UK and considered to be vulnerable overall. Dwarf spike rush occurs in a few areas in tidal mud in the Avon Estuary while pennyroyal is found only in damp grassland around the Salcombe and Kingsbridge Estuary. We will work with others to ensure that these species remain in their present sites and increase if possible. Heath lobelia, a plant of damp lowland heath, is threatened in Europe. Its largest regional population is found in the Avon catchment. Although the site is protected, there is a need for careful management to protect the population.. Agricultural improvement outside the protected area is also a threat.

| No | Action | Lead/ Other | Start | End | Cost | Progress |
|--|--|---|----------|----------|------|----------------------|
| Threats to key plant species | | | | | | |
| 10I-a X  | Contribute to local action plans to protect and encourage spread of dwarf spike rush and pennyroyal. | Agency, SHDC, BSBI, Marine Conservation Officer | 01/12/98 | 31/03/03 | <1k | No progress to date. |
| 10I-b X  | Manage site to maintain and if possible promote increase of heath lobelia colony. | DWT, EN | 01/12/98 | 31/03/03 | u/k | No progress to date. |

Issue 11: Spread of Non-native Invasive Plants

There are several alien plant species present in the catchment, which are excellent colonisers and which are spreading at the expense of more natural vegetation. Himalayan balsam (*Impatiens glandulifera*) and Japanese knotweed (*Fallopia japonica*) are widely established, and Giant hogweed (*Heracleum mantegazzianum*), although rare, presents a significant risk to health. Under the Wildlife and Countryside Act 1981²⁴ (Section 14 (2)) it is an offence if any person plants or otherwise causes to grow in the wild plants such as Japanese knotweed or giant hogweed. We have produced a leaflet dealing with these three species and their control, which is available from our offices on request. Rhododendron has also been identified as a particular problem in the oak woodland found along the banks of the River Avon, below the Avon Dam.

There are also several non-native aquatic plants, which appear to be spreading mainly from garden ponds and lakes to which they have been introduced. The most problematic species are parrot's feather (*Myriophyllum aquaticum*), fairy fern (*Azolla filiculoides*), Australian swamp stonecrop (*Crassula helmsii*), and floating marsh pennywort (*Hydrocotyle ranunculoides*). The rapid growth of these plants leads to deoxygenation of the water at the expense of other organisms and reduces biodiversity. Although they may look attractive, the plants present a public safety hazard as they form dense mats on the surface of the water which can be mistaken for solid ground. It is extremely easy for these plants to be spread unwittingly as the tiniest fragment introduced on another plant will soon flourish.

We have raised our concerns with the relevant trade associations and have asked them to increase awareness amongst retailers as to the threats presented by these plants. We cannot prevent sale of these plants as it is not against the law. There has been a successful press campaign aimed at increasing public awareness, and we suggest that they be removed from ponds where possible. We want to know more about the distribution of these plants in the catchment.

| No | Action | Lead/ Other | Start | End | Cost | Progress |
|---|--|---|----------|----------|---------|---|
| Spread of Non-native Invasive Plants | | | | | | |
| 11a ♦   | Record presence of invasive species on sites owned or managed by the Agency. Implement control programmes. | Agency, SHCCS | 01/12/98 | 31/03/03 | 3k p.a. | Control of invasive plants on Agency owned or managed sites is ongoing and will continue until we have eradicated the plants. |
| 11b ♦   | Collaborate with Japanese knotweed control programmes initiated by others. | Agency, DNPA, SHDC, SHCCS | 01/12/98 | 31/03/03 | u/k | We are happy to collaborate with DCC to produce a Devon wide information leaflet concerning Japanese Knotweed. |
| 11c ♦   | Encourage removal/control programmes for invasive plants (bankside and aquatic) to be carried out by riparian owners, pond owners and other interested bodies | Agency, SHCCS | 01/12/98 | 31/03/03 | <1k | We regularly give advice free of charge to pond owners with problems. In addition, staff have received training in order to be able to give more specialised advice. In the case of riparian sites, there is still a need to identify sites for priority control and water users can help identify these. |
| 11d ♦   | Raise awareness among general public and distributors of problems of introduced aquatic plants, and discourage suppliers from making invasive species available. | Agency, Garden Centre Trade Assocs, SDCCS | 01/12/98 | 31/03/03 | 1k | We are supporting English Nature moves to get Swamp Stonecrop added to Schedule 9 of the Wildlife and Countryside Act. |
| 11e ♦   | Check ponds for presence of alien species as part of routine operations. | Agency, SDCCS | 01/12/98 | 31/03/03 | 1k | This is done as a routine action. |

Issue 12: Recreational Use of the Catchment

We have a general duty to promote the use of inland and coastal waters for recreational purposes, and to take account of the needs of the less able. In carrying out this duty we balance the potential conflicts between conservation and recreation. We will not encourage new access routes or promote the use of particular rights of way without considering the needs of landowners or other countryside interests.

| No | Action | Lead/ Other | Start | End | Cost | Progress |
|---|--|--------------------------------------|----------|----------|------|--|
| Recreational Use of the Catchment | | | | | | |
| 12a ♦   | Work with others to develop sustainable recreation in the catchment which does not conflict with wildlife interests. | Agency, Estuary Project, DNPA, SHCCS | 01/12/98 | 31/03/03 | 1k | National R&D on the impact of recreation on wildlife due to start soon, otherwise we advise through our day to day duties. |

| No | Action | Lead/ Other | Start | End | Cost | Progress |
|---|---|---|----------|----------|------|---|
| 12b ♦   | Take part, as a neutral party, in any discussions over access agreements for canoeists. | Agency, DNPA, British Canoe Union (BCU), RAs | 01/12/98 | 31/03/03 | >1k | Whilst there have been no discussions on canoe access since publication of the Action Plan, this forms part of our routine activities. |
| 12c ✕   | Carry out further investigation into causes of saltmarsh erosion in Avon Estuary. | SHDC | 01/12/98 | 31/03/03 | u/k | There has been no further progress with this action. |
| 12d ★   | Develop and encourage use of shore based disposal systems to reduce impact of sewage and litter from boats. | SHDC | 01/12/98 | 31/03/03 | n/a | SHA can now transfer raw sewage from yachts to Salcombe STW. This includes a Harbour Authority launch with the necessary fixtures, pump and holding tank to take on the raw sewage from yachts. The shore based reception facility to accept the raw sewage is connected to Salcombe STW. It is likely that this facility shall be advertised in Summer 2000. |
| 12e ♦  | Support research into the anti-fouling paint Irgarol 1051 and its environmental effects. | Agency | 01/12/98 | 31/03/03 | u/k | Research into the environmental effects of Irgarol 1051 (and other similar chemicals) is likely to be dependant on the outcome of the Health and Safety Executive's (HSE) review. A model is being developed which will provide estimates of these chemicals in estuaries. This model will help in the regulatory process when the risk of antifouling products is assessed and conditions of use are specified. In addition, the HSE, in conjunction with the Advisory Committee on Pesticides are in the process of reviewing chemicals approved for use in antifouling paints. Research into the environmental effects of Irgarol 1051 and other similar chemicals is likely to be dependant on the outcome of the HSE's review. |
| 12f ♦  | Consider relevance of local and national studies on Irgarol 1051 to the Salcombe and Kingsbridge Estuary. | Agency, Estuary Project | 01/04/99 | 31/03/00 | 1k | Analytical methods have been developed for chemicals currently approved for use in antifouling paints and some monitoring has been undertaken as part of a national R&D project funded by the Agency and DETR. The project showed that of all the chemicals which were monitored, only diuron and Irgarol 1051 were consistently found at concentrations above the limit of detection, and that diuron was found in higher concentrations than Irgarol 1051. Results of <1-9.4 ng/l were found in UK estuaries and concentrations of 13-1420 ng/l in UK marinas. |

| No | Action | Lead/ Other | Start | End | Cost | Progress |
|--|---|--|----------|----------|-------------|--|
| 12g ★   | Provide advice on the disposal of boat scrapings. | Agency, Estuary Project | 01/12/98 | 31/03/00 | <1k p.a. | Advice was provided for the Salcombe Harbour Initiative (See Action 12h). Work on other estuaries in the catchment will be addressed through forthcoming management plans (Issue 14). |
| 12h ★   | Support Salcombe Harbour Authority's initiative regarding the controlled collection of anti-fouling scrapings and contaminated materials. | SHA, SHDC, Agency | 01/12/98 | 31/03/99 | n/a | The Marine Conservation Officer through discussions with the Agency, has investigated the most environmentally responsible way of disposing of the scrapings. The SHA now requires all persons scraping off anti-fouling paint to sweep up the scrapings thoroughly and place them in a specially designated bin on the quayside in Salcombe. Boat owners are also encouraged to put their anti-fouling paint tins, paintbrushes, rollers, rags etc. in the bin. |
| 12i ★   | Draw up contingencies for the influx of visitors viewing the 1999 solar eclipse. | Local Authorities Agency, SWW | 01/12/98 | 31/03/00 | u/k | Contingency arrangements for the Eclipse event during August 1999 were agreed between the Local Authorities, DCC and other key partners. All temporary campsites with a potential to cause environmental harm were visited by Agency officers in liaison with LA Environmental Health Officers. No major incidents were reported during or after the Eclipse event. |

Issue 13: Lack of Information on the Archaeological / Historic Value of the Catchment

The catchment contains many sites of historic and archaeological value, the majority of which are found on Dartmoor. There are 148 Scheduled Ancient Monuments within the catchment, and two Historic Parks and Gardens. Buildings and structures of county importance are protected under the Planning (Listed Buildings and Conservation Area) Act 1990. Thirty-one Built Conservation Areas have been declared in the catchment.

We have a duty to have regard to the protection and conservation of buildings, sites and objects of archaeological or historic interest when considering any proposals relating to our functions. Archaeological / historic features as yet unidentified are at risk from new developments or changes in land use.

| No | Action | Lead/ Other | Start | End | Cost | Progress |
|---|--|---|----------|----------|------|--|
| Lack of Information on the Archaeological/Historic Value of the Catchment | | | | | | |
| 13a ◆   | Support production of document(s) covering entire area; investigate potential for collaboration. | DCC, LAS, EH, DNPA, DAS, Agency, RCHME, UE, NT | 01/12/98 | 31/03/03 | u/k | We are seeking opportunities to collaborate with archaeological groups in Devon to produce summaries of existing sites DAS are exploring the 'possibility' of a parish survey - giving us valuable information for our database. |

Issue 14: Estuary Management Plans

The Salcombe and Kingsbridge Estuary Environmental Management Plan²⁵ was produced in 1994 and is managed by an Estuary Conservation Officer based at the Harbour Offices in Salcombe. The Agency is represented on the Estuary Conservation Forum and has a close working relationship with the Estuary Conservation Officer.

| No | Action | Lead/ Other | Start | End | Cost | Progress |
|---|---|--|----------|----------|------|---|
| Estuary Management Plans | | | | | | |
| 14a ♦   | Continue to contribute to Salcombe and Kingsbridge Estuary Conservation Forum. | Agency | 01/12/98 | 31/03/03 | <1k | Ongoing via attendance at meetings |
| 14b ♦   | Prepare an Estuary Management Plan for the Avon and Erme Estuaries in partnership with relevant organisations, landowners and estuary users in order to ensure and maintain the sustainable use of the estuaries. | Agency, SHDC, DCC, EN, Duchy of Cornwall, Flete & Evans Estates, users, others | 01/04/99 | 31/03/03 | <1k | A meeting was held in August with the Conservation Officer to discuss the plan. An initial draft of issues has been drawn up and we are commenting on these and providing information where necessary. |
| 14c ★   | Consider financial support towards producing an Estuary Management Plan for the Avon and Erme Estuaries. | Agency | 01/12/98 | 31/03/03 | 5k | Due to other internal priorities direct funding for Estuary Management Plans is no longer available from the Agency. However 'in kind' match funding for European for Heritage Lottery bids may be available. |

Issue 15: Unknown Causes of RQO Failure

There are two stretches where the cause of RQO failure is unknown: The South Grounds Stream from source to Slapton Ley inflow, and the Gara from source to Higher North Mill (see Section 4.1).

| No | Action | Lead/ Other | Start | End | Cost | Progress |
|---|--|----------------|----------|----------|------|---|
| Investigate unknown causes of RQO failure | | | | | | |
| 15a+  | Investigate causes of poor water quality in the River Gara and South Grounds Stream. | Agency | 01/04/00 | 01/04/01 | u/k | This is a new action, progress will be reported in the next Annual Review. This action is dependent on funding. |

6 APPENDICES

6.1 Duties, Powers and Interests of the Environment Agency

We have a wide range of interests in the areas of water management, waste management and pollution prevention and control. Whilst many of these interests are supported by statutory duties and powers, much of our work is advisory, with the relevant powers resting with other bodies such as Local Planning Authorities. For example, we are not responsible for:

- Noise problems (except if it its to with our work)
- Litter (unless it is restricting the flow of a river)
- Air pollution arising from vehicles, household areas, small businesses and small industry
- Collecting waste in your local area
- Planning permission
- Environmental health
- Food hygiene

Your local planning authority deals all these with and will contact us if necessary. We are not responsible for the quality or supply of drinking water at the tap or for treating sewage waste, although we regulate discharges from sewers and sewage treatment works.

The following table summarises our duties, powers and interests and their relationship to land use planning.

| Agency Duty | The Agency has powers to: | The Agency has an Interest (but no powers) in : | Partnership |
|--|--|--|--|
| <p>Water Resources The Agency has a duty to conserve, redistribute, augment and secure the proper use of water resources.</p> | <ul style="list-style-type: none"> • Grant or vary water abstraction and impoundment licences on application with appropriate conditions imposed to safeguard the needs of the environment, whilst allowing reasonable and justified use of available and sustainable water resources for other uses – with the aim of achieving an equal balance between the competing demand. • Revoke or vary existing licences to reinstate flows or levels to surface waters or groundwater which have become depleted as a result of abstraction, and are subject to a liability for compensation. | <ul style="list-style-type: none"> • The more efficient use of water by water companies, developers, industry, agriculture and the public and the introduction of water efficiency measures and suitable design and layout of the infrastructure. | <ul style="list-style-type: none"> • The Agency is committed to water-demand management and will work closely with water companies and developers, local authorities and relevant organisations to promote the efficient use of water. The Agency acknowledges that new resources may be needed in the future and supports a twin-track approach of planning for water resource development alongside the promotion of demand-management measures. •The Agency seeks to influence planning decisions for new development by encouraging the inclusion of water conservation measures in new properties, particularly in areas where water resources are under stress, and by ensuring that planning authorities allow for the lead time for resource development. |

| Agency Duty | The Agency has powers to: | The Agency has an Interest (but no powers) In : | Partnership |
|--|---|---|---|
| <p>Flood Defence The Agency has a duty to exercise general supervision over all matters relating to flood defence throughout each catchment.</p> <p>Water Quality The Agency has a duty to monitor, protect, manage and, where possible, enhance the quality of all controlled waters including rivers, groundwaters, lakes, canals, estuaries and coastal waters through the prevention and control of pollution.</p> | <ul style="list-style-type: none"> • Control, through Land Drainage consents, of development within 8 m of main river (Water Resources Act 1991, Section 109) or construction of a structure that would affect the flow of an ordinary watercourse (Land Drainage Act, 1991 Section 23). • Produce flood risk maps for all main rivers under S105 of Water Resources Act 1991. • Undertake works to main rivers using permissive powers. • Issue flood warnings relating to main river to the public, local authorities and the police. • Consent mineral working within 16 m of main rivers. • Issue discharge consents to control pollution loads in controlled waters. • Regulate discharges to controlled waters in respect of water quality through the issue and enforcement of discharge consents. • Issue 'works notices' where action is required to reduce the risk of pollution. • Prosecute polluters and recover the costs of clean-up operations. • Serve prohibition notices (with or without conditions) on highway authorities to require treatment and pollution measures for highway runoff. | <ul style="list-style-type: none"> • Granting of planning permission throughout a catchment but especially floodplains where development can significantly increase flood risk. This permission is granted by local planning authorities. • Installation of surface water source control measures e.g. flood attenuation structures. • Supervising the maintenance of ordinary watercourses which is a local authority remit, but may impact on main rivers. • Installation of buffer zones which reduce flood risk and have significant environmental benefits. • Urban and rural land use and measures that can reduce flood risk or the need for watercourse maintenance. • The greater use of source control measures to reduce pollution by surface water runoff. • Prevention and education campaigns to reduce pollution incidents. • The provision of highway runoff control measures which is a highway authority remit. | <ul style="list-style-type: none"> • As a statutory consultee on planning applications within main river floodplains the Agency offers advice based on knowledge of flood risk. It also advises on the environmental impacts or proposed floodplain development. • The Agency will encourage best practice, including source control measures and common standards, among local authorities and riparian owners to protect and enhance the environment. • The Agency works with the civil authorities to prepare flood warning dissemination plans and supports their endeavours to protect communities at risk. • The Agency will liaise with local authorities, developers, the Highways Agency, industry and agriculture to promote pollution prevention and the adoption of source control measures. As a statutory consultee on planning applications, the Agency will advise local planning authorities on the water quality impact of proposed developments. |

| Agency Duty | The Agency has powers to: | The Agency has an interest (but no powers) in : | Partnership |
|--|--|--|--|
| <p>Air Quality The Agency has a duty to implement Part 1 of the Environment Protection Act 1990.</p> <p>Radioactive Substances The Agency has a duty under the Radioactive Substances Act 1993 to regulate the use of radioactive materials and the disposal of radioactive waste.</p> <p>Waste Management The Agency has a duty to regulate the management of waste, including the treatment, storage, transport and disposal of controlled waste, to prevent pollution of the environment, harm to public health or detriment to local amenities.</p> | <ul style="list-style-type: none"> • Regulate the largest technically complex and potentially most polluting prescribed industrial processes such as refineries, chemical works and power stations including enforcement of, and guidance on, BATNEEC and BPEO. • Have regard to the government's National Air Quality Strategy when setting standards for the releases to air from industrial processes. • To issue certificates to users of radioactive materials and disposers of radioactive waste, with an overall objective of protecting members of the public. • Vary waste management licence conditions. • Suspend and revoke licences. • Investigate and prosecute illegal waste management operations. | <ul style="list-style-type: none"> • The vast number of smaller industrial processes which are controlled by local authorities. • Control over vehicular emissions and transport planning. • The health effects of radiation. • The siting and granting of planning permission for waste management facilities. This is conducted by the waste industry and local planning authorities. The Agency, as a statutory consultee on planning applications, can advise on such matters. | <ul style="list-style-type: none"> • The Agency provides data on IPC processes and advice on planning applications to local authorities. The Agency is willing to offer its technical experience to local authorities on the control of air pollution. The Agency wishes to liaise with local authorities in the production of their Air Quality Management Plans. The Agency will advise and contribute to the government's National Air Quality Strategy. • The Agency will work with users of the radioactive materials to ensure that radioactive wastes are not unnecessarily created, and that they are safely and appropriately disposed of. • The Agency will work with MAFF to ensure that the disposal of radioactive waste creates no unacceptable effects on the food chain. • The Agency will work with the Nuclear Installations Inspectorate to ensure adequate protection of workers and the public at nuclear sites. • The Agency will work with the HSE on worker protection issues at non-nuclear sites. • The Agency will work with waste producers, the waste management industry and local authorities to reduce the amount of waste produced, increase reuse and recycling and improve standards of disposal. |

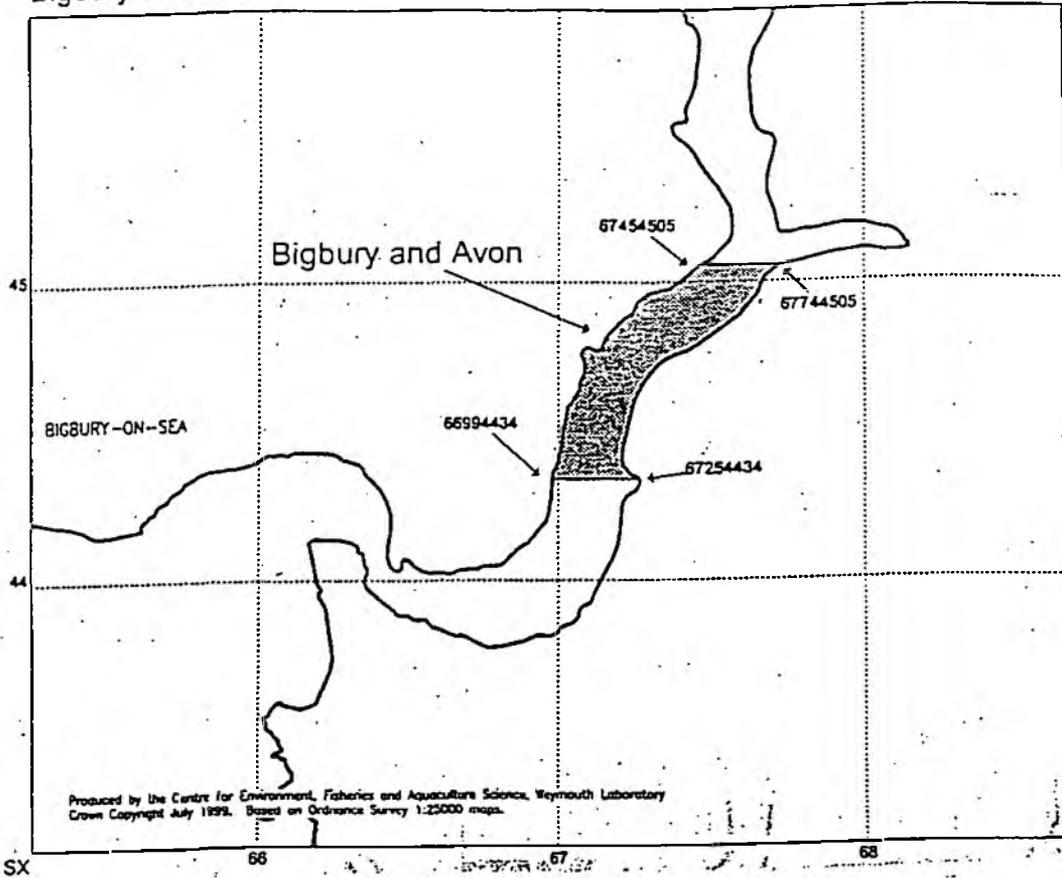
| Agency Duty | The Agency has powers to: | The Agency has an Interest (but no powers) In : | Partnership |
|--|---|---|---|
| <p>Contaminated Land The Agency has a duty to develop an integrated approach to the prevention and control of land contamination, ensuring that remediation is proportionate to risks and cost-effective in terms of the economy and environment.</p> <p>Conservation The Agency will further conservation, wherever possible, when carrying out water management functions; have regard to conservation when carrying out pollution control functions; and promote the conservation of flora and fauna which are dependent on an aquatic environment.</p> <p>Landscape The Agency will further landscape conservation and enhancement when carrying out water management functions; have regard to the landscape when carrying out pollution control functions; and promote the conservation and enhancement of the natural beauty of rivers and associated land.</p> <p>Archaeology The Agency has a duty to consider the impact of all of its regulatory, operational and advising activities upon archaeology and heritage, and implement mitigation and enhancement measures where appropriate.</p> | <ul style="list-style-type: none"> • Regulate the remediation of contaminated land designated as special sites. • Prevent future land contamination by means of its IPC, Water Quality and other statutory powers. • Report on the state of contaminated land. • The Agency has no direct conservation powers but uses its powers with regard to water management and pollution control to exploit opportunities for furthering and promoting conservation. • The Agency must further the conservation and enhancement of natural beauty when exercising its water management powers and have regard to the landscape in exercising its pollution control powers. • The Agency must promote its archaeological objectives through the exercise of its water management and pollution control powers and duties. | <ul style="list-style-type: none"> • Securing with others, including local authorities, landowners and developers, the safe remediation of contaminated land. • The conservation impacts of new development. These are controlled by local planning authorities. • Protection of specific sites or species, which is a function of English Nature. The Agency does, however, provide advice to local authorities and developers to protect the integrity of such sites or species. • Implementation of the UK Biodiversity Plan for which it is the contact point for twelve species and one habitat. • The landscape impact of new development, particularly within river corridors. This is controlled by local planning authorities. • Direct protection or management of sites of archaeological or heritage interest. This is carried out by local planning authorities, County Archaeologists and English Heritage. | <ul style="list-style-type: none"> • The Agency supports land remediation and will promote this with developers and local authorities and other stakeholders. • The Agency supports action to sustain or improve natural and man-made assets so that they are made available for the benefit of present and future generations. Many development schemes have significant implications for conservation. The Agency will work with developers, local authorities, conservation bodies and landowners to conserve and enhance biodiversity. • The Agency produces River Landscape Assessments and Design Guidelines which it uses when working with local authorities and developers to conserve and enhance diverse river landscapes. • The Agency will liaise with those organisations which have direct control over archaeological and heritage issues to assist in the conservation and enhancement of these interests. |

| Agency Duty | The Agency has powers to: | The Agency has an Interest (but no powers) in: | Partnership |
|---|---|---|---|
| <p>Fisheries The Agency has a duty to maintain, improve and develop salmon, trout, freshwater and eel fisheries.</p> | <ul style="list-style-type: none"> • Regulate fisheries by a system of licensing. • Make and enforce fisheries bylaws to prevent illegal fishing. • Promote the free passage of fish and consent fish passes. • Monitor fisheries and enforce measures to prevent fish entrapment in abstractions. • Promote its fisheries duty by means of land drainage consents, water abstraction applications and discharge applications. | <ul style="list-style-type: none"> o The determination of planning applications which could affect fisheries. | <ul style="list-style-type: none"> • Many development schemes have significant implications for fisheries. The Agency will work with anglers, riparian owners, developers and local authorities to protect fisheries. |
| <p>Recreation The Agency has a duty to promote rivers and water space for recreational use.</p> | <ul style="list-style-type: none"> • The Agency contributes towards its recreation duty through the exercise of its statutory powers and duties in water management. | <ul style="list-style-type: none"> o Promotion of water sports. This is carried out by the Sports Council and other sports bodies. | <ul style="list-style-type: none"> • The Agency will work with the Countryside Commission, the Sports Council, British Waterways and other recreational and amenity organisations to optimise recreational use of the water environment. |

6.2 The Surface Waters (Shellfish) (Classification) Regulations 1997.

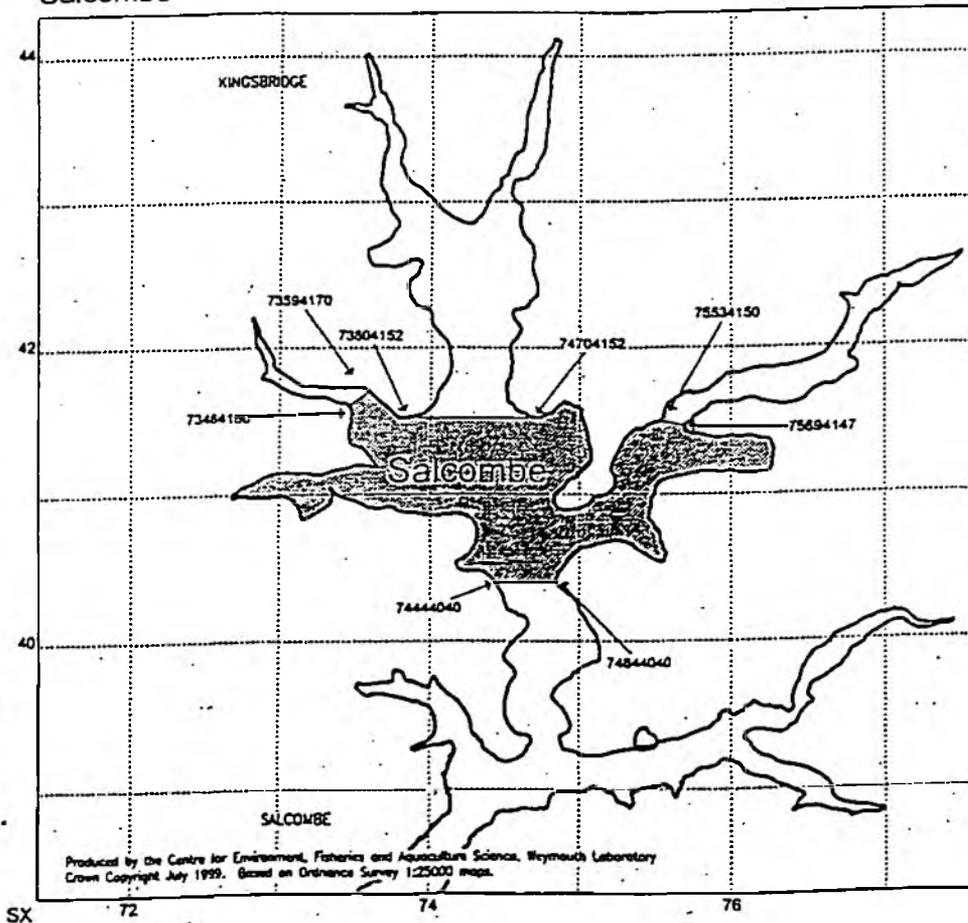
Bigbury and Avon

Scale - 1:2000



Salcombe

Scale - 1:40000



NB: Any land above the Mean High Water Mark, e.g., islands that falls within this area is excluded from the designation.

7 GLOSSARY, ABBREVIATIONS & REFERENCES

7.1 Glossary

Area of Outstanding Natural Beauty (AONB) – Designated by the Countryside Commission under the National Parks and Access to the Countryside Act 1942, to conserve and enhance the natural beauty of the landscape, mainly through planning controls.

Biochemical Oxygen Demand – A standard test which measures over five days the amount of oxygen taken up by aerobic bacteria to oxidise organic (and inorganic) matter.

Diffuse pollution – Pollution without a single point source, e.g. acid rain, pesticides, urban and agricultural runoff, etc.

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

Environmentally Sensitive Area (ESA) – An area designated by MAFF where grant aid is available to support traditional farming methods.

Groundwater – Water contained in the void spaces in pervious rocks and within the soil.

Hydrology – The study of water and its dynamics.

pH – A measurement of the concentration of hydrogen ions which cause acidity. Acid solutions have a pH of less than 7, alkalis of more than 7 and neutral solutions have a pH of 7 (e.g. pure water).

Smolt – Young salmon migrating to sea for first time.

7.2 Abbreviations

| | |
|---------|---|
| ADAS | Agricultural Development Advisory Service |
| AMP | Asset Management Plan |
| AONB | Area of Outstanding Natural Beauty |
| BAP | Biodiversity Action Plan |
| BCU | British Canoe Union |
| BOD | Biochemical Oxygen Demand |
| CEFAS | Centre for Environment, Fisheries and Aquaculture Science |
| CLA | Country Landowners Association |
| DAS | Devon Archaeological Society |
| DBWPS | Devon Bird Watching and Preservation Society |
| DCC | Devon County Council |
| DETR | Department of the Environment, Transport and the Regions |
| DNPA | Dartmoor National Park Authority |
| DWT | Devon Wildlife Trust |
| EC | European Commission |
| ESA | Environmentally Sensitive Area |
| EU | Exeter University |
| FA(s) | Fishing Associations |
| FSC | Field Studies Council |
| FWMP(s) | Farm Waste Management Plan |
| GQA | General Quality Assessment |
| ITE | Institute of Terrestrial Ecology |
| LA(s) | Local Authority(s) |
| LA21 | Local Agenda 21 |
| LEAP(s) | Local Environment Agency Plan(s) |
| MAFF | Ministry of Agriculture, Fisheries and Food |
| NERC | National Environment Research Council |

| | |
|--------|---|
| NFU | National Farmers Union |
| NT | National Trust |
| OFWAT | Office of Water Services |
| RA(s) | Riparian Owners |
| RCHME | Royal Commission on the Historical Monuments of England |
| RE | River Ecosystem |
| RQO | River Quality Objective |
| RSPB | Royal Society for the Protection of Birds |
| SHA | Salcombe Harbour Authority |
| SHCCS | South Hams Coast and Countryside Service |
| SHDC | South Hams District Council |
| SMP | Shoreline Management Plan |
| SP(s) | Synthetic Pyrethroid(s) |
| STW(s) | Sewage Treatment Work(s) |
| SWW | South West Water |
| TC | Torbay Council |
| TDC | Teignbridge District Council |
| UV | Ultraviolet |
| UWWTW | Urban Waste Water Treatment Works |
| WDA | Waste Disposal Authority |
| WDBC | West Devon Borough Council |

7.3 References

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- ¹⁴ EC Directive of 15 July 1991 laying down the Health Conditions for the Production and Placing on the market of Live Bivalve Molluscs (91/492/EEC). Official Journal of the European Communities No. L268/1
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- ¹⁶ Section 105 of the Water Resources Act 1997 (HMSO)
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- ²⁰ The UK National Air Quality Strategy – DoE/Scottish Office 1997 (HMSO)
- ²¹ Biodiversity: The UK Steering Group Report, Volume 2: Action Plans 1995 (HMSO)
- ²² Action for Biodiversity in the South West: A series of Habitat and Species Plans to Guide Delivery, EA/EN/RSPB/CWT/South West Regional Planning Conference, June 1997. ISBN 0 903138 972
- ²³ EC Directive on Species and Habitats (92/43/EEC). Official Journal of the European Communities No. L206, 1992
- ²⁴ Wildlife and Countryside Act 1981, ISBN 0 10 546981 5
- ²⁵ The Salcombe and Kingsbridge Estuary Environmental Management Plan, EN/SHDC. 1994

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

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