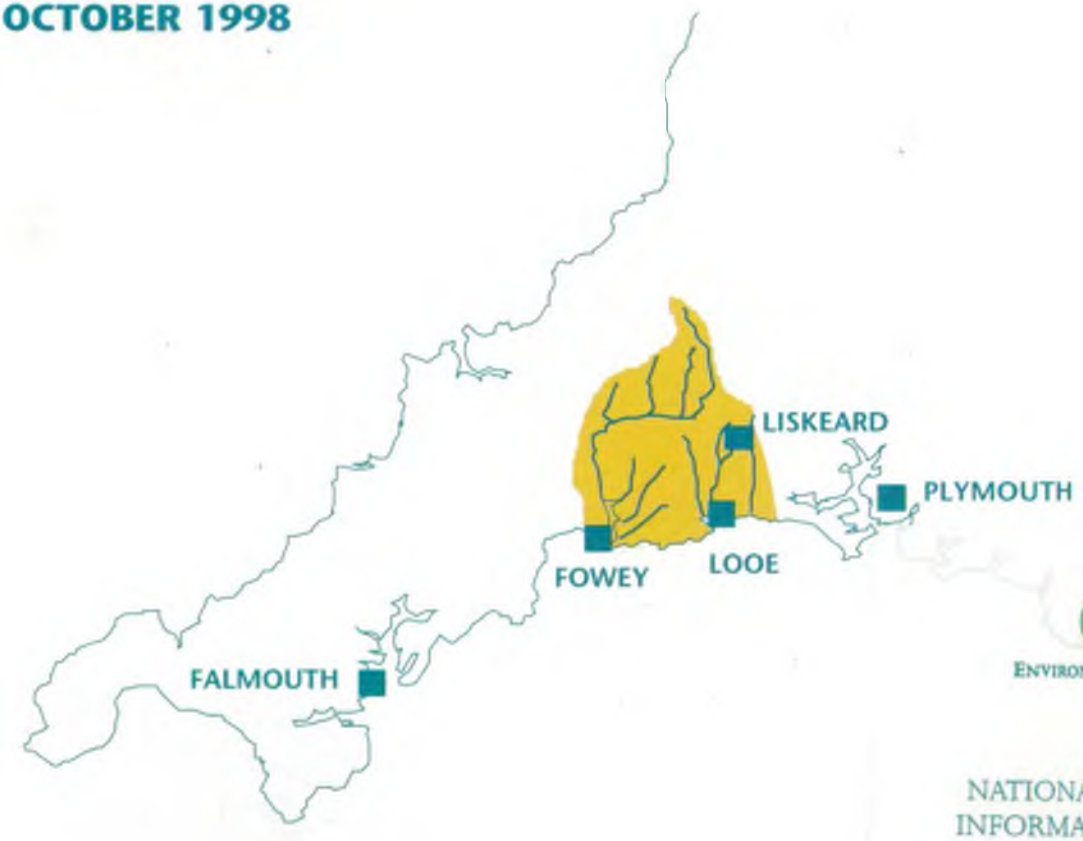
local environment agency plan

SEATON, LOOE AND FOWEY

CONSULTATION DRAFT

OCTOBER 1998



ENVIRONMENT AGENCY

ENVIRONMENT AGENCY

Your Views

This Consultation Draft Local Environment Agency Plan (LEAP) is our initial view of the issues facing South East Cornwall (Map 1 indicates the area covered by the plan). Public consultation allows people who live in or use the catchment to have a say in the development of our plans and work programmes. We welcome your ideas on our future management of this area:

- Have we identified all the issues?
- Have we identified all the options for solutions?
- Have you any comments on the issues and options listed?
- Do you have any other information or views that you wish to bring to our attention?

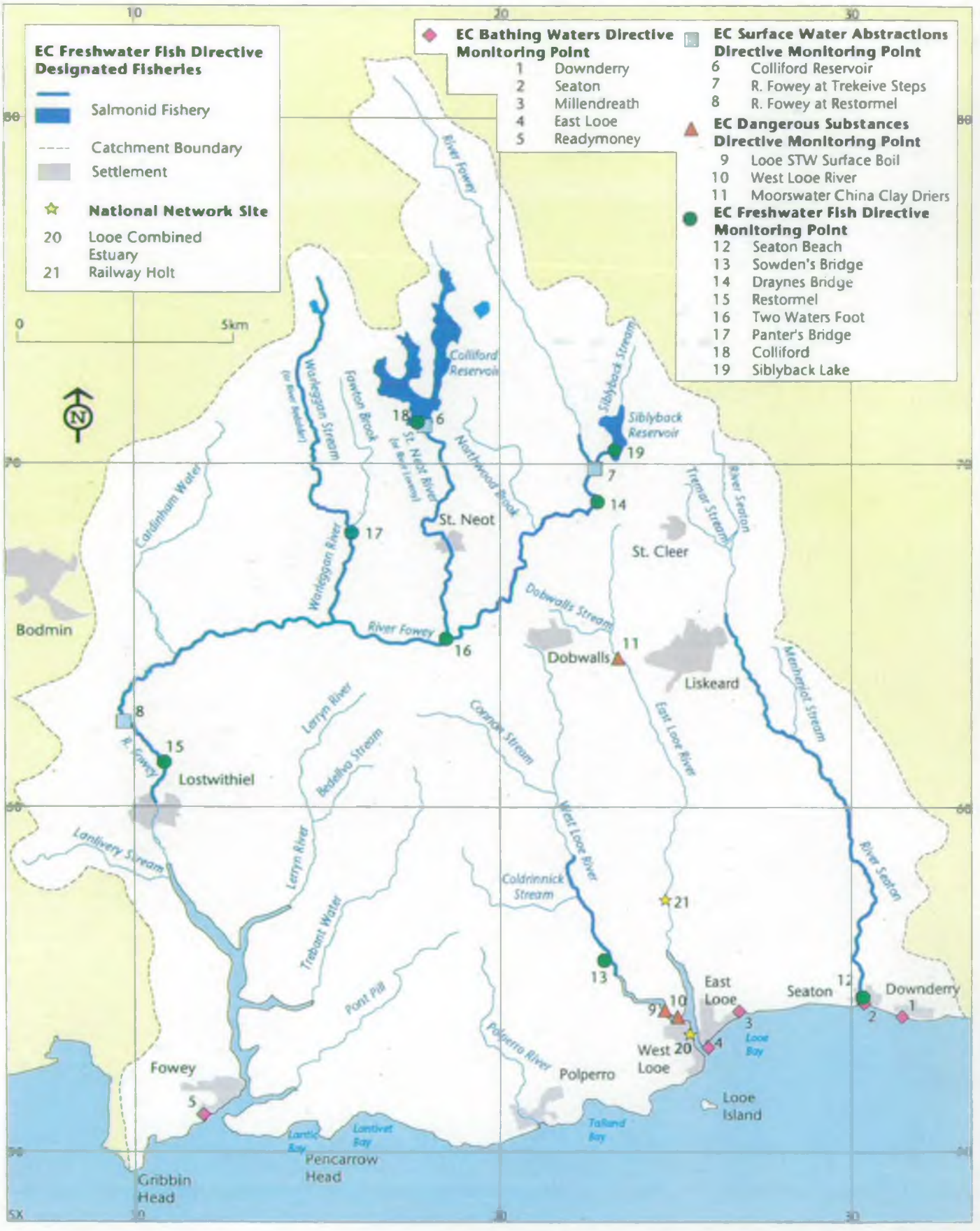
We look forward to hearing from you.

Please send your comments by 26 January 1999, preferably by writing to:
LEAPs Team
Environment Agency
Sir John Moore House
Victoria Square
Bodmin
Cornwall PL31 1EB
Tel: 01208 78301 Fax: 01208 78321

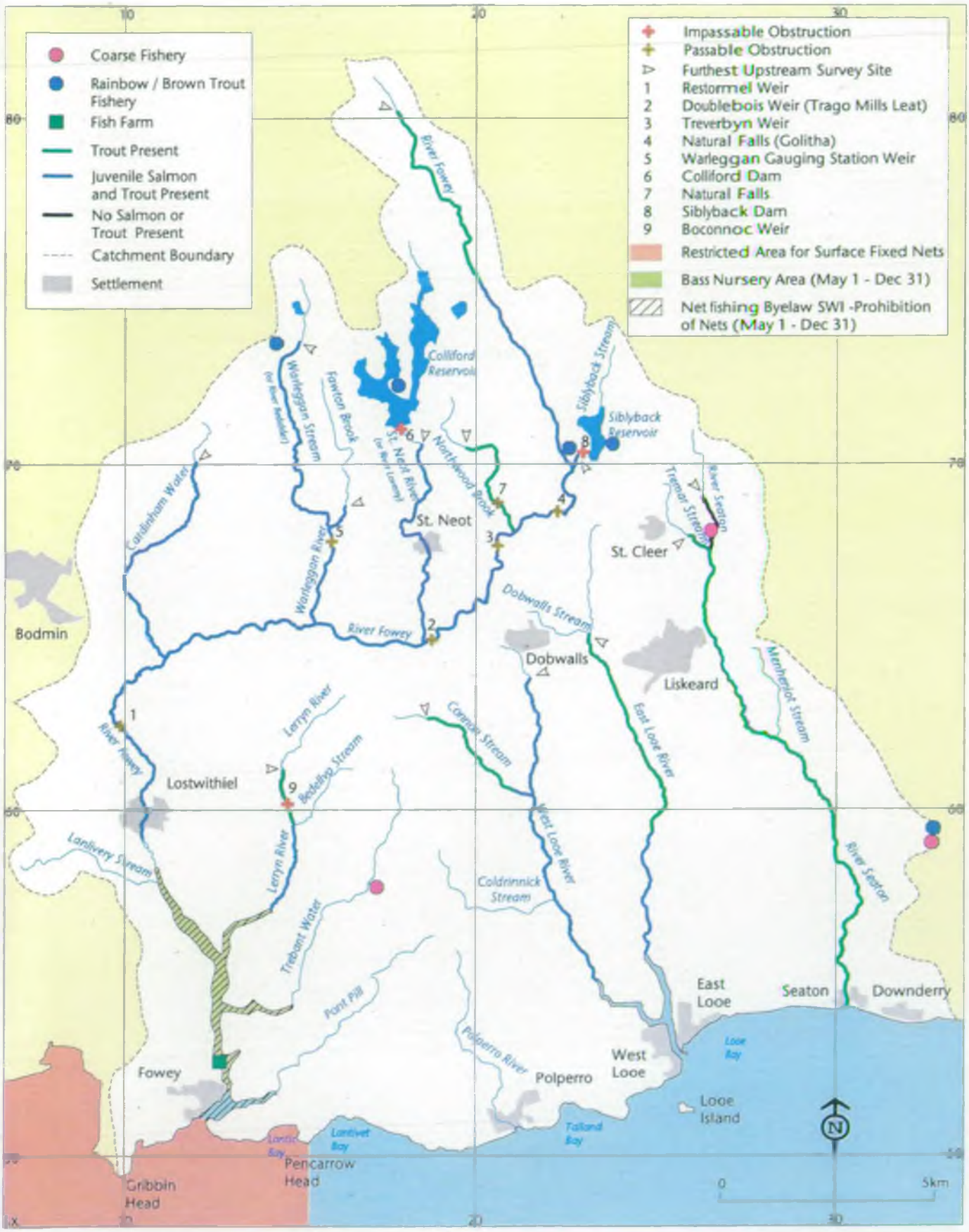
Published October 1998

Map 1 - Seaton, Looe and Fowey Plan Area

Map 3 - EC Directives Monitoring



Map 2 - Fisheries and Fish Farms



maps

Foreword

This Consultation Draft has been put together to look at the environmental problems in the area and suggest actions that are necessary to tackle the problems that arise from the pressures on the environment, and to seek new opportunities to enhance it.

We would like to thank the Steering Group for their help in compiling this plan. The spirit of partnership needed to implement this plan is represented by their valuable contributions; a spirit that will ensure that all who care for the environment can work together to enhance the whole.

GEOFF BOYD
Cornwall Area Manager

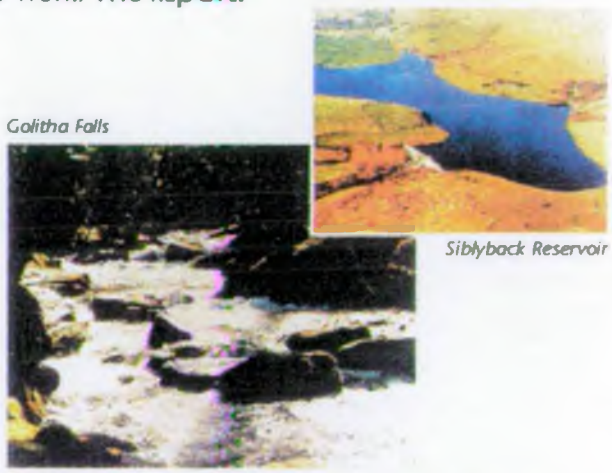
Contents

Seaton, Looe & Fowey

Local Environment Agency Plan

The Seaton, Looe & Fowey Local Environment Agency Plan (LEAP) Consultation Draft has been produced by the Environment Agency to give **you** the opportunity to comment on environmental problems or our work. The Report:

- describes the environmental resources of the area;
- explains how these resources are affected by human uses or pressures;
- outlines issues where we, or others, need to take action to address problems in the environment.



Golitha Falls

Siblyback Reservoir

We would like your comments on this Consultation Draft. We are particularly interested if there are any issues you feel we have not covered. By doing this you will be helping us and other organisations safeguard this area for the future.

A prepaid questionnaire is included with the draft, which you may prefer to use and should be returned by **26 January 1999.**

Copies of the Report are available from:
LEAPs Team
Environment Agency
South West Region
Sir John Moore House
Victoria Square
Bodmin
Cornwall
PL31 1EB
Tel (01208) 78301
Fax (01208) 78321

The Fowey Estuary

Seaton Looe and Fowey Local Environment Agency Plan - Consultation Draft - *Questionnaire*

Thank you for reading the consultation draft, this is your opportunity to tell us your views on the report. Your comments will be carefully considered in the preparation of the final report.

1. What are your main interests in the Seaton Looe and Fowey plan area ? _____

_____

_____

2. Does our vision agree with your view of the plan area ?

Yes ☐ No ☐ Partly ☐ If No, or Partly, would you like to comment why:

_____

_____

_____

3. Through consultation with local interest groups, we have identified a range of issues within the Seaton Looe and Fowey plan area. -Please list the five issues in the report that you think are ***most*** important.

1. ___ 2. ___ 3. ___

4. ___ 5. ___

4. Do you think the report has identified all the issues concerning the plan area ?

Yes ☐ No ☐ If No, would you like to give your reasons below.

_____

_____

_____

5. Are there any other comments about the report which you wish to make ?

_____

_____

_____

_____

_____

_____

_____

When we have received and reviewed the comments made on this report we will publish an Action Plan. If you would like to receive a copy of this Action plan please tick the box below and give your name and address.

☐ Yes I would like to receive a Seaton Looe and Fowey Action Plan

Name & Organisation : Address :

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

If you would like to expand further on any of your answers or you have other issues you wish to raise in regard to the report, please return them in writing with this questionnaire to the address overleaf.

Please fold this form as indicated overleaf and post to us - no stamp needed.

TUCK EDGE IN HERE

FOLD 3

BUSINESS REPLY SERVICE
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FOLD 2

Team Leader, LEAPs
ENVIRONMENT AGENCY
SOUTH WEST REGION
SIR JOHN MOORE HOUSE
VICTORIA SQUARE
BODMIN PL31 1BR

FOLD 4

ENVIRONMENT AGENCY

Please complete the Questionaire overleaf. Follow the folds 1 - 4 and post to arrive by no later than

26th January 1999

FOLD 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, are described in more detail in Appendix 1. We are required and guided by Government to use these duties and powers in order to help achieve the objective of sustainable development. The Brundtland Commission defined sustainable development *'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. Indeed the creation of the Agency itself was in part a recognition of the need to take a more integrated and longer-term view of environmental management at a national level. We therefore have to reflect this in the way we work and in the decisions we make.

Taking a long-term perspective will require 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, in order 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, in order to solve global environmental problems, local action is crucial: we must all therefore think globally but act locally.

Our aims:

- To achieve major and continuous improvements in the quality of air, land and water
- To encourage the conservation of natural resources, animals and plants
- To make the most of pollution control and river-basin management
- To provide effective defence and warning systems to protect people and property against flooding from rivers and the sea
- To reduce the amount of waste by encouraging people to re-use and recycle their waste
- To improve standards of waste disposal
- To manage water resources to achieve the proper balance between the country's needs and the environment
- To work with other organisations to reclaim contaminated land
- To improve and develop salmon and freshwater fisheries
- To conserve and improve river navigation
- To tell people about environmental issues by educating and informing
- To 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; and
- Being efficient and businesslike in all we do.

Our Vision

Our vision is of this area being managed in a sustainable way, that balances the needs of all users with the needs of the environment. We look forward to a future where a healthy local economy leads to:

- biodiversity and physical habitat for wildlife being enhanced
- people's enjoyment and appreciation of the environment continuing to grow
- pressures from human wants being satisfied sustainably.

We cannot realise this vision on our own and will seek to work in partnership with local authorities, local industry and local people to turn this vision into reality.

Environmental Standards

There is a great deal of legislation that determines the way we operate and carry out our enforcement duties. The Environment Act 1995 provides some harmonisation of powers, but we also rely on existing legislation, including the Control of Pollution Act 1974, the Control of Pollution (Amendment) Act 1989, the Environmental Protection Act 1990, the Radioactive Substances Act 1993, the Salmon and Freshwater Fisheries Act 1975, the Water Resources Act 1991, and the Land Drainage Act 1991.

We are the competent Authority for over 25 European Community environmental Directives, whilst a further 70 Directives affect our policies and activities. These include the Quality of Bathing Waters, Dangerous Substances, Industrial Plant Emissions, Waste Management Framework, Quality of Water to Protect Freshwater Fisheries, and the Urban Waste Water Treatment Directives.

Failure to comply with standards has helped us to identify the issues raised in this plan. Further detail on standards and compliance is available from the address given on the back of this plan.

Local Environment Agency Plans

We are committed to delivering environmental improvement at the local level and one of the ways to do this will be through Local Environment Agency Plans. These plans will reflect our close contact with industry, the public and Local Government and will contribute towards achieving sustainable development.

The process of drawing up the plans will involve close consultation with all interested parties. It will promote the effective, accountable and integrated delivery of environmental improvement at the local level. The plans will translate policy and strategy into delivery on the ground and will result in actions, either for the Agency to fulfil, or for others to undertake through influence and partnership. We believe the process will benefit the local community by influencing and advising external decision-makers and public opinion. It will build trust by being open and frank when dealing with all issues.

Environmental Themes

The Agency's principal and immediate environmental concerns stated in our national strategy 'An Environmental Strategy for the Millennium and Beyond' relate to nine themes. They are :

- Addressing climate change
- Improving air quality
- Managing our water resources
- Enhancing biodiversity
- Managing our freshwater fisheries
- Delivering integrated river basin management
- Conserving the land
- Managing waste
- 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. In this document a number of proposed actions are presented for consultation with all who live, work and have an interest in the area.

The LEAP Area, An Overview

Characteristics:

- Exposed windswept granite uplands, rising to tors and clitter slopes on Bodmin Moor. Extensive treeless heathland and wet moorland.
- Numerous broadleaved wooded valleys, varying greatly in size, generally narrow and densely wooded. Sheltered wooded valleys with fast-flowing streams. Drowned valleys (rias) with wide estuaries.
- Generally a dispersed settlement pattern of hamlets, farmsteads and small fishing villages, with villages mainly of more recent, industrial origin on moorland fringes and valleys.
- Variable field pattern dominated by stone-built Cornish hedges.
- Important archaeological and industrial archaeological sites.

The plan area is based on the catchments of the Rivers Seaton, Looe and Fowey; these drain from the southern slopes of Bodmin Moor to the south coast between Gribbin Head to the west and Seaton Beach in the east. The total area of the catchment is 465 square kilometres. Much of the catchment lies under county or national landscape designations.

The rivers of the area rise on the granites of Bodmin Moor, which is an upland notable for its conservation, landscape and archaeology. The River Fowey catchment includes Colliford and Siblyback Reservoirs, which supply water to a large part of Cornwall. Rivers with dams have a modified regime. At times of low flows releases for abstraction downstream enhance water levels.

The area is essentially rural in character, ranging from open moorland to rolling hills intersected by steep-sided river valleys. There is no heavy industry, but historically there was extensive mining activity, especially in the north of the catchment, which has left its own legacy of abandoned mines and workings.

A small resident population scattered in small towns and villages gives rise to challenges and problems in providing services. An influx of summer visitors to the region changes the pattern of demand for the summer season. Infrastructure such as water supply, sewerage systems and waste management must be designed to cope with both patterns of usage.

Recent and continuing research is showing that climate change is likely to change rainfall patterns in the future. It is expected that rainfall will be less frequent, but when it occurs, it will fall in larger quantities in shorter time. The small but steep catchments in Cornwall are extremely vulnerable to flash flooding at present and this change could exacerbate the situation.

We monitored 168.5km of rivers in the Seaton, Looe and Fowey Catchment in 1997 (176.6km of rivers were monitored in 1996). In 1997, over 97 per cent of monitored river stretches in the catchment were of good or very good chemical quality and 2.85 per cent of the stretches were of fairly good quality. In biological terms, there was no deterioration in the monitored river lengths. Although water quality has recently improved, there are parts of the catchment where it is not good enough. These shortfalls in quality are discussed in the Environmental Issues section.

A Better Environment through Partnership

The Agency is well placed to influence many of the activities affecting the environment, through the Environment Act 1995 and other legislation. Local authorities are responsible for controlling land use, and it is primarily land use change in the long term and the opportunities presented by redevelopment that will tackle the issues of urban runoff, contaminated land and the renewal of river corridors. In addition the support of community groups, individuals, landowners and businesses will be needed to tackle issues such as litter, pollution, private sector investment and river corridor enhancement.

The Agency must work with others to ensure that the Actions in this plan are implemented and that the long-term vision can be realised (Appendix 1 further describes our interests and opportunities for partnership). The Agency is working closely with local authorities in particular. Education also has an important role in changing attitudes and work practices.

There are a range of initiatives by various bodies which at some level cover the area of this plan. These are both statutory and non-statutory in nature and cover a variety of topics from environmental to social and economic interests. A number of bodies have produced, or are producing, some form of documentation. It is important for all parties that where different interests overlap discussion occurs on those areas of common interest. In this way we can integrate action, being more efficient in our actions, avoiding duplication (or conflict) and making the most of limited budgets.

Shoreline Management Plans (SMPs) – SMPs are being produced, by a coastal group with statutory interests working together, for the coastline covered within this plan. They provide a forum for an integrated review of coastal processes and sustainable coastal defence policies to set objectives for the future management of the shoreline. The coastal group includes representation from local authorities, the Agency, Cornwall County Council and English Nature.

South East Cornwall SUSTAIN – The SUSTAIN initiative is a network organisation co-ordinated by Caradon Forward Planning and Countryside Service, designed to bring together Tourism businesses and to assist them through the Green Audit Kit. Development of the Green Audit Kit was carried out by the West Country Tourist Board and has now been adopted by the English Tourist Board for national use. The aim of the kit is to allow businesses to audit themselves and achieve a saving in cost and also to improve the sustainability of the tourist industry, whilst making best use of their environment. The Agency acts in an advisory role with the initiative.

Cornwall Waste Management Forum and Agency waste minimisation promotions – The Agency liaises with the Cornwall Waste Management Forum, a partnership with the six District Councils and the County Council, and works in collaboration with the Payback organisation in setting up Waste Minimisation Groups. Through our regular contact with businesses we are advising firms on their environmental management systems including waste minimisation.

Cornwall Air Quality Forum – The Cornwall Air Quality Forum has been formed as one of 14 pilot areas nation-wide. It is led by Carrick District Council, and has representation from all local authorities in the county and from the Agency. We do not cover all aspects of air pollution but work closely with other regulatory bodies such as local authorities.

Cornwall Biodiversity Action Plan – Conservation of habitats and species is co-ordinated through the production of Biodiversity Action Plans (BAPs). This process, which began at the Rio Earth Summit in 1992, enables us and other

conservation bodies to prioritise and concentrate our efforts where they are most needed.

The Cornwall Wildlife Trust (CWT), supported by the Agency and other groups, has produced the document 'Cornwall's Biodiversity Volume 1: Audit and Priorities'. This was published in June 1997, and together with digitised habitat, species and land use data for the whole county it will be a powerful tool for use in drawing up priorities for action. The extent of loss of various habitats between 1988 and 1995 can be measured, as can the degree of threat to that remaining.

Volume 2, which includes short listed habitats and species action plans drawn up by expert Focus groups, including plans for Otter and Bodmin Moor, was published in September 1998.

LIFE Project – New development is one of the major threats to semi-natural habitats and the species they support. Cornwall Wildlife Trust, through the LIFE project, are mapping the levels of change in such habitats, and what they have been converted to. The Agency is one of a number of partners in this project.

Looe VMCA – Caradon District Council's Coast and Countryside Officer was responsible for the establishment of a Voluntary Marine Conservation Area in Looe in April 1994 and has since promoted marine awareness in Looe through a variety of interpretative projects.

The Countryside Service consists of a small team which is part of the Forward Planning and Countryside Services Unit at Caradon District Council. The Moorland and Countryside Officer based at Minions, and the Coast and Countryside Officer based in Looe, aim to conserve and enhance the beauty of Caradon and to extend the opportunities available for people to enjoy and understand its natural and cultural heritage. The Officers initiate projects in partnership with other agencies and organisations, and also on land that is wholly owned and managed by the District Council. The Agency has provided funding for interpretation boards.

Fowey Estuary Management Plan – The Fowey Estuary Management Plan is an integrated non-statutory plan for the sustainable management of the Fowey Estuary, currently being implemented. It has been adopted by all estuary users and regulatory authorities. It seeks to incorporate and complement the duties of statutory authorities operating in the area. The plan covers an area from Gribbin Head to the eastern end of Lantivet Bay; to the tidal limits of the Rivers Fowey and Lerryn; and the hinterland of the river and streams to 5 miles from the centre of the river.

Many activities occurring in the estuary area are the responsibility of the Harbour Authority or local authorities. The plan management group provides a meeting-point for review and common action. Projects include: a proposal for the designation of the estuary as a Voluntary Marine and Coastal Conservation Area (VMCCA); investigation into the sedimentary regime of the Fowey estuary with a view to reducing sediment inputs into the system from fluvial sources; and better management of such inputs within the estuary.

Environmental Management Partnership schemes – Schemes exist to encourage appropriate management of biologically rich habitat. Countryside Stewardship, administered by MAFF, various SSSI Management Agreements agreed with English Nature, as well as positive advice on habitat issues by the Agency, FWAG, CWT and others helps to ensure conservation of this natural resource. The Uplands Bodmin Moor pilot project, which is seeking 5b EU matched funding, is an example of partnership working to preserve semi-natural habitat through environmental management. Schemes should target, as a priority, those areas and features noted as priorities in the Cornwall BAP (see Table A).

Clinical Waste Code of Practice - Sharps Disposal Project – A partnership between the Agency, Cornwall County Council, District Councils and the Cornwall and Isles of Scilly Health Authority has reviewed and re-issued the Code of Practice for disposal of clinical waste in the county. In response to concerns over the existing provision for disposal of needles and other sharps, this partnership has also initiated a free service for the disposal of these items.

Environmental Issues in the Area

Issue 1 Sea level rise and effects of global climate change

Flood defence schemes are designed to accommodate future sea level rises. Information regarding the predicted rise in sea level is obtained from the Intergovernmental Panel for Climate Change. The net sea level rise estimates are then used to establish the anticipated effects over the life of a flood defence scheme. The approach is to design the works so that as sea level rise occurs the defences can be raised without having to rebuild the whole structure.

Raising the level of defences above that necessary today can only be justified where evidence of actual sea level rise supports the need. The current allowances for the South West Region of the Agency are a rise of 5mm/year until the year 2030 and 7.5mm/year thereafter. A further potential effect of global warming is that of increased storminess, which could lead to increased wave action and annual rainfall, resulting in greater flood risk.

We have designed our flood defence schemes to allow for a rise in sea levels. An annual review of the condition of existing sea defences is undertaken.

Flooding – We plan for a rise in sea level when constructing new defences and raise existing defences where practicable. Future flood defences at Looe, for example, will have allowances for sea level rise included. The forthcoming Shoreline Management Plan (SMP) will recommend preferred options for the management of coastal defences, taking into account such changes.

Ecological Impacts – Intertidal habitats may be lost, unless they are re-created naturally or through human intervention. Any intervention could have knock-on effects for other fringing habitats. Assessment of the potential for preservation or re-creation at different locations, and the consequences of each, needs to be carried out.

Action	Targets	Environmental benefits	Responsible body and partners
Make recommendations for the management of defences through SMP process.	Complete the draft SMP by April 1999.	Policies to be based on sustainability	Coastal group
Identify sites vulnerable to habitat loss through SMP process.	Complete the draft SMP by April 1999.	Risks identified	Agency, local authorities, MAFF

Issue 2 Air quality

Air pollution may be in the form of gas or particulate matter. Its dispersion and dilution depends on the nature of pollution and climatic conditions. Its impact may be local, especially with regard to particulate matter which will often settle on nearby land or water. Or it may be global, for example affecting the ozone layer or the concentrations of greenhouse gases such as carbon dioxide. It is vital that we protect the air since the future health of mankind and the environment depends on it.

We do not cover all aspects of air pollution but work closely with other regulatory bodies such as local authorities. Our duties and powers with regard to air quality are described in Appendix 1.

Air pollution – Levels of ground-level ozone in parts of the catchment are generally above those at which damage to vegetation may occur. Management of these issues will be picked up in the work of the Cornwall Air Quality Forum.

The Cornwall Air Quality Forum has been formed as one of 14 pilot study areas nation-wide. It is led by Carrick District Council and has representation from all local authorities in the county and from the Agency. The forum co-ordinates the actions of regulatory bodies in Cornwall in regard to the National Air Quality Strategy.

Action	Targets	Environmental benefits	Responsible body and partners
Co-ordinate the actions of local authorities in Cornwall with regard to the National Air Quailty Strategy.	Co-ordinate the review of air quality by individual local authorities.	Identify areas where actions on air quality may be required.	Cornwall Air Quality Forum

Issue 3 Meeting current and future water demand

Water is an essential but finite resource that needs careful management to ensure its availability. We are in a position to help develop public awareness of this issue and guide people towards a more sustainable use of water. Our duties and interests in water resources can be found in Appendix 1.

We have a duty under the 1991 Water Resources Act to conserve, redistribute, augment and secure the proper use of water resources in England and Wales. In fulfilling this role we must also carry out our general duties of environmental conservation and have regard to the statutory obligations of water companies. Water resources development is planned over long time-scales to allow sufficient time to meet any forecast potential supply-demand imbalance.

At the water summit in May 1997 John Prescott announced his ten-point plan. Amongst the actions required as a result of this was a review of the water abstraction licensing legislation. The direction of changes proposed by the Department of the Environment Transport and the Regions is set out in the DETR consultation paper 'The review of the Water Abstraction Licensing System in England & Wales '(June 1998). The full nature and impact of changes will not be clear until the final papers are approved by Parliament. We will need to implement any changes that arise from this process and amend licensing policies as appropriate.

Meeting current demand – The plan area is part of the Colliford Strategic Supply Area, which is used to manage water supply in Cornwall. The demand for water in the catchment is currently supplied from a number of sources, dominated by Colliford Strategic Reservoir.

Water supply and demand forecasts up to 2021 for the individual strategic supply areas were published in the NRA's Water Resources Strategy document, 'Tomorrow's Water'. The demand forecasts are based on two scenarios, 'high' and 'low' growth in demand. A deficit has been forecast for Colliford Strategic Supply Area under a 'high' scenario by 2001. As current demand figures are closer to a 'medium', if not the 'low' forecast they indicate that any deficit will not arise until at least 2011. In addition the subsequent development of the Colliford pumped storage scheme, which the Agency supports as a prudent water resource development, has increased the amount of reliably available water in the strategic supply area in comparison to the figures used in 'Tomorrow's Water'. This may further delay any deficit until later than 2011. The pumped storage scheme involves SWWL using their current authorised quantity; therefore they did not require an abstraction licence amendment. No further development is expected in the near future.

In parallel with OFWAT's current third periodic review the Agency requires water companies to produce a Water Resources Plan for the next 25 years. This will include revised demand forecasts, a review of their resource availability and consideration of any potential resource options to meet forecasted deficits over the 25 years. This information will enable us to revise the public water supply aspects of our Water Resources Strategy. The internal draft of SWWL's plan was submitted to the Agency in June 1998. A national review of all the draft plans will be published in October 1998. The Agency expects SWWL will wish to make public the key aspects of their draft plan before completing the final plan in April 1999. We expect to publish our revised Regional Water Resources Strategy, covering all aspects of water resource use, during the year 2000, following the outcome of the third OFWAT periodic review by the end of 1999.

In May 1998 the Agency published 'A Price Worth Paying' which sets out the National Environmental Programme and the improvements in the environment that the Agency expects from the third periodic review.

Promotion of water-saving measures – With the average family using close to 30,000 gallons (130,000 litres) of water per year, the need to review measures

for water saving is apparent. One area that has gained public prominence is the re-use of 'grey water', which is household waste water excluding spent toilet water ('black water'). The use of 'grey water' can vary from washing machine and bathroom sink water being utilised for the irrigation of land, to household plumbing systems which recycle 'grey water' for re-use in such applications as washing machines and toilet flushing.

The Agency is currently investigating the effectiveness and applicability of grey-water use. The main factors being considered are the water-saving potential, water quality, customer acceptability and financial viability. A report on the trials will be published later this year ('A Study of Greywater Recycling', National Water Demand Management Centre). We support any safe and hygienic water-saving measures which do not have a harmful effect on the environment. We also support further research into innovative water-saving devices such as greywater recycling, which has the potential to save up to 30 per cent of the average domestic water consumption. This and other demand management research is centred at our National Water Demand Management Centre.

Meeting future demand – The Agency requires the water companies to have satisfied us that they have applied a range of appropriate demand management and resource management options, as well as reducing leakage towards an acceptable level, before any further resources can be developed.

Demand management involves a number of different initiatives including metering. Meters are installed in all new domestic properties and customers can have their homes metered at subsidised prices should they opt to. People who have a garden sprinkler are asked to register it with the company on the understanding that they may be metered at a later date. The water companies have a duty to apply and demonstrate efficient use of water within the business and to its customers. In this respect they have published water efficiency plans which contain strategies to encourage water saving by the customer. SWWL's plan includes advice on how to save water in the home and garden and explains what the company is doing to encourage other bodies, such as the local council and builders, to help the customer to save water. SWWL also have a free educational resource pack, Running Water, which provides National Curriculum support for 8-to-13 year olds.

More efficient management of existing resources can increase the quantity of water that is available to supply the customer. Both conjunctive use of sources and effective leakage control are key targets here. SWWL have set a public leakage reduction target which equates to 15 per cent of overall leakage from the company's pipes by the year 2000 and they are currently on course to meet this reduction.

The Agency is a formal consultee on local authority structure plans. We assess the level of development and comment with respect to the available water resources in the area. We also comment on demand management measures which can be incorporated within new housing developments: for example, low flush toilets, normal showers instead of power showers, normal-pressure hot water as opposed to mains-pressure, low water-use dishwashers and washing machines and provision of water butts.

Non-public water supply abstractions – It is possible that there may be local environmental problems associated with full uptake of the few consumptive private abstractions in the catchment. The Agency will continue to monitor the net commitment to private water abstractions and to have a regard to the amount of licensed volume take-up and its effects. Future abstraction needs will continue to be addressed through the abstraction licensing procedure.

Operation of the Colliford Lake and Siblyback Reservoir Scheme – These reservoirs are operated in conjunction with other sources, both within the Fowey catchment and elsewhere in Cornwall, to meet the public water supply

needs of the county. The impacts on flows in the River Fowey and the St Neot River are mitigated by a compensation water release at all times from the two reservoirs. In addition flows are enhanced at times of low flow by the requirement for augmentation releases to be made to support continuing abstraction at Restormel and Trekeive Steps intakes. This is required when river flow falls below prescribed levels at particular points.

Effective use and conservation of these reservoir resources is achieved by operating them in accordance with a formal Operating Agreement between the Agency and SWWL under Section 20 of the Water Resources Act 1991. This includes:

- Control curves based on reservoir storage to ensure conservation measures are brought in at key times.
- Measures to control releases to ensure they do not cause damage to the river environment downstream.

Colliford reservoir also has a fisheries water bank which can be used over a three-year period. The Agency decides how best to utilise this resource in the best interests of the fishery.

SWWL have also agreed to incorporate particular restrictions in how they utilise their existing Restormel abstraction licence for pumped augmentation of Colliford under the Operating Agreement, to help ensure it is used effectively but in a way which minimises impacts on the water environment.

Action	Targets	Environmental benefits	Responsible body and partners
Agree and audit assumptions used in OFWAT's third periodic review of SWWL's Asset Management Plan (AMP).	By OFWAT deadlines	Balancing needs of users with the needs of the environment	Agency, SWWL
Revise the Regional Water Resources Development Strategy.		Balancing needs of users with the needs of the environment	Agency
Promote demand management and water-saving measures.	Ongoing in partnership with other interested parties	Balancing needs of users with the needs of the environment	SWWL, Agency
Agree programme of use of the 909Ml fisheries water bank.	Ongoing over next three years	Improved fishery	Agency, SWWL, Fowey River Association

Issue 4 Protection of wildlife, habitats and historic features

In today's landscape, rivers and wetlands provide refuge for many rare species. The conservation of the quality of rivers and wetlands is therefore vital in this catchment. Current initiatives to classify and describe the area, such as the Rivers and Wetlands Biodiversity Action Plan (R&W BAP), Regional Biodiversity Initiative and Natural Area profiles will help us to prioritise our work, to encourage wise use of environmental resources and to secure sustainable environmental improvements.

Biodiversity simply means variety of life. Within the plan area there are a range of international, national, county and locally important habitats, wildlife and historic features, many of which have some form of designation aimed at their protection. Conservation in its broad sense should be an integral part of all activities, and many of the issues and proposed actions within this document promote sustainable use of resources, or seek to make up for serious losses or impacts. A more targeted approach of specific conservation actions is being developed through the 'Cornwall Local Biodiversity Initiative' currently being progressed by a wide range of interested bodies in Cornwall, and through English Nature's 'Natural Areas' Initiative. It is our aim to achieve sustainable use of, and development within, the catchment, allowing us to meet current needs without compromising the environment and the ability to meet our future needs. Key habitats and species have been identified for protection in Cornwall Biodiversity Audit and Priorities. This and subsequent Action Plans will provide a framework for our targets in nature conservation.

The Cornwall Wildlife Trust (CWT), supported by the Agency and other groups, has produced the document 'Cornwall's Biodiversity Volume 1: Audit and Priorities'. Within the plan area the key species and habitats which are particularly relevant to the activities in which the Agency has an involvement are shown in Table A. The table also shows major threats, where known. The table only gives an indication of the key nature conservation features of the catchment. For a full description of habitats and species the Cornwall BAP should be consulted.

Table of Key habitats and species

Key habitats	Species	Status	Threats
Boundary features e.g. Cornish hedges, ditches	Ferns, bryophytes, small mammals, reptiles	National priority	Removal, neglect, poor management
Freshwater ponds, rivers/streams, watercourses e.g. Dozmary Pool	Otters, bullhead, salmon, lower plants, water voles	Nationally and locally important	Nutrient enrichment, changes in land use, runoff, fish farming, water abstraction
Estuaries e.g. Looe and Fowey Estuaries	Wading birds, eel-grass beds and associated species, salmon	Locally important, some species nationally important	Pollution, recreation
Woodland, wooded valleys, ancient semi-natural woodland e.g. Golitha Falls	Special blue beetle, pied flycatchers, lichens, fungi, bats	Nationally and locally important	Lack of management, habitat loss
Bodmin Moor	Moorland species including golden plover	Nationally important	Recreation, stocking levels

Volume 2 of the Cornwall BAP includes Action Plans for the most vulnerable and threatened species and habitats. By analysis of the digitised land cover data, as well as the more traditional monitoring techniques such as carrying out field surveys, the causes of habitat and species loss can be assessed.

The extent of loss or degradation of habitats between 1988 and 1995 varies between habitat types. Wetland habitat has suffered the greatest loss of all county-wide, with a decrease of over 7 per cent during the study period, compared with a loss of 3 per cent over the last decade for all habitat types. In addition to total loss, habitat quality has become degraded through neglect and fragmentation into smaller blocks.

It is widely believed that by looking after habitat its component species will be safeguarded also. This is true to a degree, but there are some species that need specific help too. An example is the otter, which has returned to the area in significant numbers, following major decline in the 1960s and 1970s. Otters have relatively large territories and cannot be effectively conserved just by protecting a few sites. Measures such as ensuring acceptable water quality is achieved, and carrying out works at specific locations to prevent road kills, need to be put in place also. The otter will be the subject of its own Species Action Plan. We have part funded a Wildlife Trust otter project officer in Cornwall who will promote otter conservation throughout the county.

We will carry out surveys every three years on the Rivers Seaton, Looe and Fowey and their associated tributaries for rare species including otters, water voles and rare fish.

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

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

River Habitat Survey – Surveys of the Rivers Seaton, Looe and Fowey catchments have been and continue to be undertaken. This will help us to build a better picture of the environmental resource within the area and how best to manage and enhance it in the future.

Invasive plants – As a result of the Japanese knotweed conference on 25th November 1997, organised by the Agency and hosted by the National Trust, a co-ordinated control policy for Japanese knotweed is being developed to endeavour prevention of further spread and control of the existing areas. Representatives from County and District Councils, the Agency, the National Trust, Cornwall Wildlife Trust, SWWL, ECCI and many more were present at the conference. Our flood defence maintenance teams have adopted the best practice for the control of Japanese knotweed developed by the group.

We have sponsored a countrywide survey of Japanese knotweed which is being compiled by the Botanical Society of the British Isles, and will be available in a GIS format. Recording forms have been sent in by many local people. A leaflet explaining how to prevent the spread of Japanese knotweed and a recording sheet are available from this office.

The Agency is also monitoring the establishment of hemlock water dropwort and facilitating its removal where it occurs in spawning gravels. Initial clearance in the Draynes Valley will be followed by a routine clearance every two years. Work has begun on clearing the Warleggan River and one of the sites has already been completed.

Surveys of invasive plant species will also be conducted in the three-yearly summer survey programme - this will help when considering maintenance proposals.

TBT survey of Cornish Coast – Tributyltin, or TBT, is the anti-fouling agent used to prevent the accumulation of barnacles and other marine life on the hulls of ships. In 1987, in recognition of its highly toxic effects on the environment, its sale for use on vessels under 25m was prohibited.

The Agency will be studying populations of dogwhelks, *Nucella lapillus*, which are particularly sensitive to TBT. Levels as low as 1ng/l have been shown to induce sex-change effects in female dogwelks. Chronic exposure to TBT eventually leads to sterility in dogwhelk populations. Studies during 1997 showed a profound impact on dogwhelk populations in the vicinity of the Fal Estuary. The study will be expanded during 1998 to survey for evidence of TBT contamination around the Cornish coast, including in the vicinity of the Fowey Estuary.

Suitable coastal areas will be sampled for the presence of dogwhelks, proof of successful breeding (egg clusters and juveniles) and evidence of sex-change effects in mature specimens.

Action	Targets	Environmental benefits	Responsible body and partners
Promote eradication of invasive plant species, e.g. Japanese knotweed		Enhanced biodiversity	Knotweed group
Monitor the spread of hemlock water dropwort and remove it when it occurs on spawning gravels.	Ongoing	Enhanced biodiversity	Agency, angling clubs
Implement Biodiversity Action Plans.	In accordance with Cornwall Biodiversity Action Group timetable.	Enhanced biodiversity	Cornwall Biodiversity Initiative
Study of the dogwhelk population.	1998	Understanding problems	Agency
Carry out River Habitat Survey.	Sites prioritised to where required.	Provides data on habitat security and enables trends to be identified.	Agency

Issue 5 Decline in fish stocks

Natural fisheries are important ecological assets and are also of commercial value for angling and netting. Fish are good indicators of the overall health of our rivers. We use information from our routine population surveys and fishing catch returns to assess the diversity and health of fish populations. Following a research and development project we are currently involved in implementing a classification scheme which will enable us to set targets for the catchment and also to put the fisheries into a national context. Our duties and powers with regard to fisheries are described in Appendix 1.

The River Fowey is noted as a premier game fishery within both Cornwall and the South West of England. As the result of a general declining trend observed in the rod and net catches of both Atlantic salmon (*Salmo salar*) and sea trout (*Salmo trutta*) over the last ten years, a great deal of concern has been expressed with regard to the present and future status of migratory salmonid stocks within the River Fowey. Working in association with the Fowey River Association, the Agency has supported the development of a spawning sanctuary in the Draynes Valley. Investigations are under way to identify measures to protect the water quality of the sanctuary from risks posed by the nearby A30. This may involve the use of oil interceptors and/or constructed wetlands.

The River Fowey has for many years supported a net fishery for migratory salmonids. Within the last twenty years there have frequently been four commercial seine nets operating. In 1997, following the recently renewed Net Limitation Order negotiated by the Agency (1997-2007), the river currently supports two commercial netting licences within the estuary.

National decline in salmon stocks – An assessment of fish stocks carried out by the Agency revealed that salmon catches in England and Wales in 1997 were amongst the worst on record, with the overall level of spawning below that needed to maintain healthy sustainable salmon fisheries.

The Agency is already undertaking action to protect and conserve salmon stocks through its national Salmon Strategy. Under this strategy, action plans are being produced for every main salmon river in England and Wales and the entire programme will be completed by 2002. Working with other interested organisations, the Agency is taking steps to improve river habitats and water quality, whilst introducing additional controls on fishing and promoting 'catch and release' schemes where these are needed.

New measures, which could include a ban on fishing for part of the season, are being discussed in response to independent scientific advice on the state of salmon stocks internationally, given to the North Atlantic Salmon Conservation Association (NASCO) at its meeting in Edinburgh in June. This emphasised the decline in stocks throughout southern European waters, believed to be linked to changes in oceanic climate, which is putting some salmon populations at risk.

Particular concern was expressed about stocks of multi-sea winter spring salmon (the older, larger salmon, which tend to return to rivers from the sea earlier in the year). It was therefore recommended that immediate action be taken to reduce exploitation. As a result, the contracting parties to NASCO, including the EU, not only reduced the quotas in the Greenland and Faroes sea fisheries, but also agreed to examine further measures to protect stocks in their home waters. The Agency is therefore seeking the views of its Regional Fisheries, Ecology and Recreation Advisory Committees (RFERACs) on the need for baseline national action, and the type of measures that should be introduced across England and Wales. Options could include:

- Closing both net and rod fisheries for salmon until early summer

- Introducing mandatory catch and release for rod fisheries for the same period, together with method restrictions to reduce catch and limit damage to fish

- Introducing other stock protection measures later in the season, especially to protect larger salmon.

After consulting its RFERACs, the Agency will discuss with MAFF and the Welsh Office what action is required. National byelaws could, for example, be proposed for 1999 which would require wider public consultation.

While we agree there is a national decline we are concerned that factors specific to the River Fowey are having a significant effect. There is a need to investigate the situation and produce a review of the data available on both the historic and the current situation. This will enable a list of recommendations to be produced. The Agency, SWWL and the Fowey River Association are discussing an initiative to effect improvements to the Fowey fishery based on sound scientific information.

Influence of Colliford and Siblyback reservoirs on the River Fowey system – The decline of salmonid fish stocks in the Fowey system has coincided with the development and operation of Colliford reservoir, although it is recognised that the impact of this new flow regime is not proven and there are many other factors that could be affecting migratory salmonid stocks. Until 1996 the spawning territory lost under Colliford reservoir was mitigated by a hatchery and stocking programme for sea trout. This was replaced in 1997 with a buy-back of licensed netting time in the Fowey estuary from the beginning of the season until 15th June.

A further development that may impact on fish stocks is the full use of the Restormel licence for winter storage to Colliford.

There are three issues that require further examination. These are:

- To review the monitoring data gathered since the construction of Colliford, identify any points of concern and suggest actions. Determine if additional information is required and develop a programme of monitoring.

- Make use of the water bank available in Colliford. Review options including a possible trial release in November 1998 to draw sea trout and salmon into the St Neot system.

- Make before-and-after study of fish movements at Restormel in relation to implementation of Pump Storage abstractions using Restormel fish counter. Following study, review need for winter prescribed flow.

Salmon Action Plan – A Salmon Action Plan for the River Fowey is due to be published in 1999-2000. This is part of the National Salmon Management Strategy, which has the following aims: safeguarding the salmon stocks, maximising economic/social benefits and ensuring long-term improvements. Each plan will describe the fishery and how it is performing; identify the key issues in each river system; set fishery targets and fishing effort controls; and outline a programme of improvements. Salmon spawning targets have been calculated and used to review the Net Limitation Order for the Fowey; these will be further refined in the Salmon Action Plan.

Upper Fowey designation as nursery area and spawning sanctuary – The Fowey River Association, in partnership with the Agency, have established most of the Draynes Valley as a spawning sanctuary area where there is no fishing. This will prevent the removal of fish that have managed to reach spawning areas and are close to spawning. Restoration of the valley is currently taking place, where the river bed has been damaged by the A30 road improvements and field drainage which took place in the 1970s. In addition to the spawning area, we are looking at opportunities to create wetlands which will help reduce impacts from A30 runoff. We need to encourage access to this area for migrating salmonids.

Estuaries and Sea Fisheries – The Environment Agency is the Sea Fisheries Authority within the Fowey and Looe estuaries, whilst under the Salmon and Freshwater Fisheries Act 1975 (SAFFA) the Agency enforces the salmon and sea trout legislation within the estuaries and out to a six-nautical-mile limit from the coast.

Within the Fowey Estuary complex there is a bass nursery area, its seaward extremity being a line drawn 270° true from Penleath Point to the opposite shore. However, there is at present no bass nursery within the Looe estuary.

Natural predation – Natural predation by birds and mammals occurs throughout the fishery, and is perceived by others as being an issue. At present it is not known if this is having a significant impact on fish stocks. Licences to kill predators are issued by MAFF once a fishery owner proves economic impact. We work with fisheries owners and MAFF to advise on preventative measures. We will not support the licensed killing of predators until and unless proof of serious commercial damage has been established and killing proven to be the most effective means for preventing significant loss to fish stocks.

Introduction of non-native species – Within the catchment there are lakes containing a variety of fish species not found within the river system. We are concerned about the occurrence and impact of fish escapees on native species. For example, serious diseases can be spread to wild populations and predation by alien species can cause damage.

Fish farming – The fish-farm cages in the Fowey Estuary have been bought out and restarted with the approval of MAFF. The farm is being used for feed trials to reduce the reliance on fish meal for fish food and also work on a vaccine against fish lice. Levels of infection by fish lice on the farmed fish are being monitored and controlled.

The Agency have no evidence of problems arising from fish farming in the plan area, including the estuaries. Regular disease monitoring of wild fish is carried out by MAFF and no problems have been identified.

Poaching – Rigorous and high-profile enforcement within the rivers, estuaries and coast needs to be maintained by the Environment Agency, MAFF and Cornwall Sea Fisheries Committee (CSFC). The Agency endeavours to respond quickly to all reports of poaching, but increasingly relies on information from other bodies and the general public to alert us quickly to poaching incidents. We can then target resources effectively to combat the problem.

Instream structures – The Agency is currently working with SWRA (South West Rivers Association) on a joint protocol to achieve appropriate siting of these structures. Whilst benefiting the river by creating deep-water habitats, instream structures may cause flooding, erosion and prevent spawning, if placed in inappropriate locations. We are at present preparing a guidance policy for best practice for the removal of trash dams and other obstructions; however identification and removal of serious obstructions is ongoing.

Knowledge of fish populations – We carry out routine juvenile fish surveys on the rivers in the plan area. The most recent survey of the River Fowey system was completed in 1997. A full report on the current and historical status of juvenile and adult salmonid abundance is available from the Bodmin office. The broad conclusions were:

- In general, the 1997 juvenile survey identified that migratory salmonid populations, and particularly salmon, were at their lowest level for many years.

- Historically the St Neot River appears to have been a relatively important spawning tributary for both salmon and sea trout. It is evident that salmon and sea trout spawning, and the subsequent production of smolts, has declined substantially since 1993. Juvenile densities since 1985 have been consistently below those that were achieved prior to that year.

- The Warleggan and Cardinham rivers have recorded their lowest-ever salmon fry densities in 1997. The historic survey data from these sites provides evidence of a long-term decline in salmonid densities on these tributaries.

- The observed decline in salmon juvenile densities is of great concern and is evident throughout the Fowey catchment.

The Agency has installed a fish counter at Restormel. It is in the process of being validated at present; however, the initial indications are that the counter is working effectively. Rod and net catches of salmon and sea trout from the River Fowey can be analysed to look at trends. The declared rod catches indicate that there has been a substantial decline in catches over the last 20 years. Further information on rod and net catches is shown in Appendix 2.

Potential improvements – Results from freshwater surveys have indicated low fish densities at some sites, such as reduced salmon fry densities found in the St Neot, Warleggan and Cardinham rivers. We will carry out investigative work when resources allow.

There is a problem with fish passage at Golitha Falls due to the natural barrier under certain flow conditions. We will need to investigate possible solutions to encourage access.

The Agency is currently assessing all significant obstructions to fish access throughout Cornwall. As part of this work we will assess the fish passage at Palmers Bridge and promote appropriate remedial measures.

Action	Targets	Environmental benefits	Responsible body and partners
Investigate reasons for decline of fish stocks in River Fowey.		Fulfil potential of fishery Aid actions to counteract national decline	Agency, SWWL, Fowey River Association
Investigate effects of reservoir operation on the fishery.		Fulfil potential of fishery	Agency, SWWL, Fowey River Association
Salmon Action Plan: Refine targets level for salmonid fishery population.	1999/2000	Fulfil potential of fishery	Agency
Promote creation of wetlands in Draynes Valley to reduce impact of A30 runoff.		Environmental improvements	Agency, Fowey River Association
Gravel cleaning where siltation is limiting spawning in Draynes Valley.			Agency, fisheries interests
Prepare a best practice protocol for positioning of instream structures.		Best position of the structures to prevent flooding	Agency, SWRA
Complete validation of the fish counter at Restormel on the River Fowey.			Agency
Investigate low juvenile populations.	When resources allow	Fulfil potential of fishery	Agency
Investigate possible solutions to fish passage at Golitha Falls.			Agency

Issue 6 Protection of shellfish beds

The DETR is currently consulting on whether waters, including those in the Looe and Fowey estuaries, should be designated under the EC Shellfish Waters Directive. This would offer a greater protection to shellfish and designations would allow discharges causing an impact on shellfish to be improved where required.

Shellfisheries are currently regulated under the EC Shellfish Hygiene Directive (see Appendix 3). The Directive protects consumers of shellfish commercially collected from designated sites but does not offer any protection of shellfish health. The latter is provided by the EC Shellfish Waters Directive, which is the tool for regulating discharges which are potentially harmful to shellfish (see Appendix 3). No shellfish waters are currently designated in the Seaton, Looe and Fowey catchment.

Action	Targets	Environmental benefits	Responsible body and partners
Consult on whether to designate waters in the catchment under the EC Shellfish Waters Directive.	Consultation by DETR taking place.	Protection of shellfish and control of potentially harmful discharges	DETR

Issue 7 Effects of effluent discharges

Rivers and seas have a natural ability to render the main constituents of many effluents harmless, providing that effluent disposal is properly controlled. Throughout the area there are numerous sites where the Agency consents the discharge of effluent into surface waters (freshwaters, estuaries and coastal waters) and groundwater. Discharge consents only apply to point source discharges: specific, identifiable discharges of effluent from a known location.

Discharges which have the greatest potential to affect the quality of the water environment have numeric concentration limits attached to their consents. These limits may apply to individual substances or to groups of substances and are set at levels needed to protect the environment from harm and ensure compliance with River Quality Objectives (RQOs), EC Directives and International Conventions.

Diffuse sources of pollution, such as agricultural runoff and urban or highway runoff, have to be tackled using other regulatory powers.

Sewage treatment improvement plans – Improvement plans for South West Water Services Limited (SWWL) discharges are subject to available funding being approved by OFWAT, the water industry's regulator. A strategic business plan known as Asset Management Plan 2 (AMP2) was developed based on guidelines agreed between the NRA, the former DoE, the water services companies and OFWAT in 1994. This plan will run from 1995 to 2000.

OFWAT have recently initiated the next periodic review of water charges which will result in AMP3, which will run from 2000 to 2005. We are currently reviewing those discharges where improvements are required; any improvements will then be subject to available funding being approved by OFWAT.

Those sewage treatment works (STWs) being considered for improvements in the AMP3 programme are listed in Appendix 3.

Looe – There is considerable local concern over the bathing water failing to meet mandatory standards in 1993, 1996 and 1997. While there may be bacterial loadings other than those from SWWL, the Agency is currently liaising with SWWL regarding the honouring of its AMP2 commitment of improvements.

Looe STW and the overflows may have contributed to the failure of Bathing Waters Directive standards at East Looe. Improvements to the sewerage system are planned for completion by the end of March 1999 and year-round UV disinfection is to be installed at the STW by December 1999.

East Looe River – Final effluent from Liskeard STW (which is marginally breaching its consent) may have contributed to RQO non-compliance in two stretches of the East Looe River. Combined sewer overflows (CSOs) at Liskeard and Lamellion Mill may also have contributed to RQO non-compliance in two stretches of the East Looe River.

Readymoney Cove – There were Bathing Water Directive failures in 1991, 1993 and 1997. A sewage collection and treatment scheme in Fowey has been completed by SWWL. The 1997 failure has been linked to two rainfall events in August of that year (*see Issue 8*).

Seaton – Crude discharge at Seaton Beach may have contributed to failure of the Bathing Waters Directive at this location in 1992. The new Seaton and Downderry STW, which includes secondary treatment and year-round UV disinfection, has been built to protect the compliance of Seaton bathing water with the Directive. SWWL are currently appealing to DETR against a number of conditions in the consent.

River Seaton – Menheniot STW, which discharges into the River Seaton, is breaching its consent and a CSO which discharges upstream of the works may have contributed to the

RQO non-compliance in the Menheniot Stream. Following enforcement action, improvements to the storm overflows have been completed and they are no longer considered to be a problem.

The current consents for St Cleer and Pelynt STWs will not protect the long term RQOs of the rivers which the STWs discharge to (see Appendix 3). We are seeking improvements to these STWs in AMP3. Any improvements will be subject to funding being approved by OFWAT.

Urban Waste Water Treatment Directive – The UWWTD Directive requires higher standards of treatment for discharges to *sensitive* areas. Sensitive areas are those waters that receive discharges from population equivalents of greater than 10,000 and are eutrophic, or may become so in the future.

Bodinnick, Golant and Polperro outfalls all require improvements to meet the requirements of the Urban Waste Water Treatment Directive. We are seeking improvements to these outfalls in AMP3; however, any improvements will be subject to funding being approved by OFWAT. The Polperro sewerage system is inadequate and in need of repair, resulting in blockages and leaks. We will continue to seek improvements to Polperro sewerage system.

The East Looe river downstream of Liskeard STW is currently being monitored to determine whether it is eutrophic or may become eutrophic, in which case a sensitive area designation will be sought under the Urban Waste Water Treatment Directive (See Appendix 3).

Closure of Park Pit and Moorswater Driers – During 1996 the industrial discharges from ECCI's sites at Park Pit on Bodmin Moor and the Moorswater Driers at Liskeard ceased with the closure of the two sites. There are still surface water discharges from the sites but no operations are carried out so they are no longer routinely monitored.

Management of private treatment works – Private sewage treatment plants, especially for sites that have seasonal fluctuations in populations, can have serious environmental impacts on their receiving environments. This is often due simply to a lack of understanding of the function of the systems being used. Basic understanding and maintenance of these facilities could prevent such impacts and the potential for enforcement action from the Agency.

Action	Targets	Environmental benefits	Responsible body and partners
Upgrade Looe STW.	Complete by December 1999.	Compliance with EC Bathing Waters Directive	SWWL
Carry out resewerage of Looe and improvements to CSOs.	Complete by end of March 1999.	Compliance with EC Bathing Waters Directive	SWWL
Determine appeal by SWWL against consent conditions at Seaton and Downderry STW.		Current compliance with EC Bathing Waters Directive secured	DETR
Seek improvements to St Cleer STW.	Complete by 2005, subject to approval of funding by OFWAT.	Protection of downstream RQO	Agency, SWWL
Seek improvements to Pelynt STW.	Complete by 2005, subject to approval of funding by OFWAT.	Protection of downstream RQO	Agency, SWWL
Improve Bodinnick outfall to meet appropriate treatment level under the EC Urban Waste Water Treatment Directive.	Complete by 2005, subject to approval of funding by OFWAT.	Improved water quality	SWWL
Improve Golant outfall to meet appropriate treatment level under the EC Urban Waste Water Treatment Directive.	Complete by 2005, subject to approval of funding by OFWAT.	Improved water quality	SWWL
Improve Polperro outfall to meet appropriate treatment level under the EC Urban Waste Water Treatment Directive. Continue to seek improvements to Polperro sewerage system.	Complete by 2005, subject to approval of funding by OFWAT.	Improved water quality.	SWWL
Monitor the East Looe River downstream of Liskeard STW to determine whether it is, or may become, eutrophic.	Provide monitoring data to DETR who will decide whether a sensitive area designation can be made.	Improved water quality	Agency
Produce leaflet to promote care and maintenance of seasonally affected private STWs.	1999	Improved water quality	Agency

Issue 8 Unknown causes of poor water quality

Monitoring under the EC Bathing Waters Directive has indicated a failure at Readymoney Cove beach in 1997 for which we do not know the cause. Failure to comply with the Bathing Waters Directive has occurred at Readymoney Cove in three years since 1990: 1991, 1993 and 1997. The failures to comply in 1991 and 1993 have been attributed to the old sewage system for Fowey. The subsequent completion of the new sewage scheme has remedied these. The 1997 failure, however, resulted from two samples taken during rainfall events in August, and the precise reason for failure is the subject of detailed investigation.

We will prioritise investigations into RQO for compliance. We will investigate all significant failures and persistent marginal failures. Investigations into marginal failures will only be undertaken where resources allow.

Action	Targets	Environmental benefits	Responsible body and partners
Investigate cause of 1997 Bathing Waters failure at Readymoney Cove.	Compliance with Bathing Waters Directive at Readymoney Cove	Improvement of bathing water quality	Agency
Investigate causes of BOD non-compliance at Moorswater.	As prioritised	Improvement of freshwater water quality	Agency

Issue 9 Contingency planning

There is a need to review existing contingency plans to enable rapid and effective response to an oil spill (hazardous cargo) incident. Such potential spills could come from land or water-borne sources inside or outside the estuary. Although those responsible have an existing contingency plan, it needs to be reviewed and the measures strengthened.

Oil spills – Looe and Fowey Harbour Masters will be drawing up a new contingency plan soon, following which a working group comprising Harbour Commissioners, English Nature, the Environment Agency, District and County Councils will be established. Sensitivity mapping of features requiring protection will be produced and booming points agreed upon. Principal areas for future development include:

- Sensitivity mapping
- Agreeing clean-up methods - highlighting areas vulnerable to oil spills and proposing appropriate clean-up methods,
- Agreeing on booming points and planning booming exercise to test these,
- Contingency planning - setting out agreed courses of action under different circumstances and as appropriate, to be drawn up after booming exercise.

Eclipse 1999 – Some concern has been voiced over the effects on services in Cornwall of the likely increase in visitors to see the eclipse in August 1999. The effect on water resources will be transitory and the stress will be on the capacity of the water distribution system. The Agency is working in conjunction with other bodies to minimise effects of the large number of expected visitors on the infrastructure and the environment. The Agency are involved in the Waste and Water Quality Working Group. This group includes representatives from SWWL, County Environmental Services, District and County Councils and industry. The purpose of the group is to plan for impacts on the environment during the eclipse.

Prevention is better than cure – The Agency and its predecessor organisations have always been closely involved in pollution prevention and education. The Agency reaffirms its commitment to pollution prevention and working in conjunction with industry and the public to minimise or eliminate pollution at source. The aim is that, through the promotion of advisory literature, regular inspection and promotional talks or seminars, the Agency wishes to show it is not just a regulator.

Action	Targets	Environmental benefits	Responsible body and partners
Develop contingency plans for oil spill emergency action.		Enhanced environmental protection	Harbour Authorities, Agency, EN, Councils
Develop contingency plans to deal with potential increase in visitors during eclipse.	By Aug 1999		All relevant authorities
Promote education and campaigns to highlight pollution prevention measures throughout industry and at home.	Ongoing	Enhanced environmental protection	Agency

Issue 10 Recreational pressures

There is widespread recreational use throughout the catchment, with a large proportion based on or around the water. Much of this can be absorbed without unacceptable impact on the environment or conflict between competing uses. However, instances do occur where recreational activities need to be more carefully managed.

Most of the issues arising from recreational pressure in Fowey area are dealt with in the Fowey Estuary Management Plan. The Agency supports projects where appropriate and sits on the steering group for the plan. One example of these initiatives is the promotion of access for the disabled to the estuary. This joint project between the Agency, Fowey Harbour Commissioners, National Trust and Lostwithiel Town Council aims to enhance disabled access to areas of the Fowey estuary including Coulson Park, Ethy Woods and Fowey.

Seaton Valley – The lower Seaton Valley site was acquired by Caradon District Council in November 1995 with a view to creating an amenity and conservation area. Restoration of the valley is already well under way. The Agency hopes to fund a feasibility study to investigate the potential for restoring the lower stretches of the river Seaton. If the report is favourable and further funding is available the Agency will work with Caradon and others to restore the river and the floodplain habitats.

Cycleways and footpaths – The sustainable transport organisation Sustrans is developing a series of traffic-free routes across Britain. A route from Deerpark Wood to East Looe has been proposed. We are supportive of new routes where they can be managed without adverse effects on the environment or other users, and will assist whenever possible through, for example, providing bridges where they currently do not exist. The Agency provides advice on the appropriate use of walks alongside rivers and canals.

Action	Targets	Environmental benefits	Responsible body and partners
Support the Estuary Management Plan and its actions including promoting access to Fowey Estuary for the disabled.		Enhanced amenity	Fowey Estuary Management Plan steering group
Fund feasibility study on restoration of Seaton Valley.		Biodiversity	Caradon District Council, Agency

Issue 11 Effects of farming and forestry

Agriculture covers the majority of the plan area, from moorland hill farms on Bodmin Moor to mixed and dairying in the more sheltered areas towards the coast.

Farming – There is a declining trend in the numbers and severity of pollution incidents relating to farming. This has resulted from the extensive, proactive pollution prevention work carried out by the former NRA and the subsequent positive response from the farming community.

However, farming may have an impact on water quality and habitats within the catchment. For example, farming practices may have contributed to RQO failures in the River Seaton, Trebant Water, River Lerryn and Bedellva Stream (see Appendix 3).

Silt – We are concerned over the effects of silt, which can come from many sources including agriculture, on the fishery. We need to assess the impact on eggs and young stages of fish. As a precautionary measure we need to identify and reduce silt inputs. The Agency and other bodies work in partnership with farmers to identify and put into place management techniques in sensitive locations to reduce loadings of silt from agricultural sources.

Forestry – Well-managed woodlands in the right places do not harm the water environment and will often bring benefits. However, in certain circumstances forestry development and management can cause problems. Areas of concern to the Environment Agency include acidification, soil erosion, pollution, water yield, increased flooding risks and damage to wildlife.

There are major commercial woodlands in the Glynn Valley area. Pollution risks to the water environment from forests within the plan area come primarily from poor harvesting techniques. A code of practice, 'Forest and Water Guidelines', published by the Forestry Authority in 1993 sets out ways to minimise such risks.

Upland Bodmin Moor Project – The Agency is a partner in this project, which seeks to promote conservation of wildlife and archaeological features with sustainable economic development on the farms of Bodmin Moor.

Action	Targets	Environmental benefits	Responsible body and partners
Promotion of Code of Good Agricultural Practice for the Protection of Soil, particularly in conjunction with changes of land use and crop patterns.	RQO compliance	Improvement of water quality	MAFF, Agency
Investigate sources of silt.	Following the completion of a R&D project by South Wessex Area into controlling silt, we will undertake recommendations where feasible.	Improvement of fishery and riparian environment	Agency, WCRT, Fowey Harbour Commissioners

Issue 12 Development pressures

Land use is the single most important influence on the environment. It follows therefore, that land use change has important implications for the environment which can be both positive and negative. Government planning guidance highlights the importance of communication between local planning authorities (LPAs) and the Agency, and the relationship between land use and environmental matters.

The control of land use change is primarily the responsibility of LPAs, through implementation of the Town and Country Planning Acts. Local development plans provide a framework for land use change and are the key consideration in the determination of planning applications. Our duties and powers with regard to development are described in Appendix 1.

The Agency is a statutory consultee on development plans and certain categories of planning application. This allows the Agency's views to be considered by the council prior to a planning application being decided or policies in a development plan being approved. For example, a proposed scheme to develop near a watercourse would be assessed by the Agency to ensure that it did not increase flood risk. If it was acceptable we might then seek to retain and enhance the area of the watercourse, improving the aesthetic, amenity and ecological qualities of the location. The Agency would wish to comment on a plan detailing this enhancement and would suggest that a streamside zone of at least 7 metres be set aside for this purpose.

The Agency has produced guidelines to local planning authorities on environmental policies and why they are important.

Sustainable development – In 1987, the World Commission on Environment and Development (the Brundtland Commission) defined sustainable development as that *which meets the needs of the present without compromising the ability of future generations to meet their own needs.*

Sustainable development brings together four principles - environmental protection, providing for the future, quality of life, and fairness - to create a new policy which integrates environmental, developmental, social and economic concerns. One of the primary reasons for setting up the Environment Agency was to provide a means of helping the government deliver its sustainable development strategy. Section 4 of the Environment Act 1995 defines the Agency's aims and states that *the minister shall give statutory guidance on objectives and the contribution to sustainable development.* Guidance has been published by the Department of the Environment; the key elements are that the Agency should:

- take a holistic approach to the protection and enhancement of the environment
- take a long-term perspective
- maintain biodiversity by exercising its statutory obligations with respect to conservation
- discharge its regulatory functions in partnerships with business in ways which maximise the scope for cost effective investment in improved technologies and management techniques
- provide high quality information and advice on the environment.

We will take forward these key elements by holistic environmental management, including this LEAPs process.

Consultation guides – The Agency produces consultation guides for each local planning authority which contain our recommendations for development restraints on environmental grounds. Planning authorities are encouraged to adopt the guides as policy. Consultation guides are revised and updated annually.

Flooding – Local planning authorities and ourselves are required by DETR (in Circular 30/92 - Development and Flood Risk) to liaise closely on flooding and surface water runoff matters. The aim is to ensure that flooding risks that might arise from a development are recognised and made an integral part of the decision-making process undertaken by local planning authorities. Flooding and drainage issues are also to be taken fully into account during the preparation of land use development plans. In this respect we have responsibility to prepare surveys under Section 105 of the Water Resources Act 1991 to define the nature and extent of flood risks. The Section 105 survey for main river (see Glossary) in the plan area was completed in 1997.

The Agency is encouraging the adoption of source control: the selective use of structures such as soakaways as part of a development to promote infiltration of surface water runoff. These would help to replenish groundwater as well as reduce the erosion potential in watercourses; however, their use must be site dependent.

Review of old mineral permissions – The Environment Act 1995 introduced new requirements for Mineral Planning Authorities to carry out an initial review and updating of old mineral planning permissions and the periodic review of all mineral permissions thereafter. The broad aims of the review are to provide for improved operational and environmental practices and for the appropriate restoration of mineral sites through updated planning conditions - although the nature of the new conditions will be constrained by a liability to pay compensation where they unreasonably prejudice the economic viability or the asset value of active mineral sites.

The Agency is a consultee in the process of determining new conditions, and this will require a thorough assessment of each site. Often sites, particularly those which have been dormant for many years, are of valuable nature conservation and archaeological interest. Clearly, many sites will be of geological interest, and may also have implications for surface and groundwater resources and quality. It is important that appropriate conditions are put in place to protect these interests.

Wildlife – New development is one of the major threats to semi-natural habitats and the species they support. The Agency aims to protect features of significant conservation and ecological value through all the Agency's regulatory and internal consultations.

Cornwall Wildlife Trust, through the LIFE project, are mapping the levels of change in semi-natural habitats, and what they have been converted to.

Action	Targets	Environmental benefits	Responsible body and partners
Control or minimise disturbance of former mining sites via planning procedures.	Ongoing	Towards sustainable development	Cornwall County Council
Plan development to prevent adverse effects on environment, including increase in flooding risk.	Ongoing	Towards sustainable development	Cornwall County Council, District Councils
Promote source control through increased awareness.	Site-specific details where appropriate	Enhancement of ecological qualities alongside flood prevention	Agency

Issue 13 Flood defence

River flows vary widely and are affected by the weather, geology and land use. We manage flood risk from rivers and the sea using Flood Defence and Land Drainage powers. We manage flood defences and land drainage to balance the needs of all river users with the needs of the environment. Our duties and powers with regard to flood defence are described in Appendix 1.

Our statutory flood defence committees make decisions on flood defence. All rivers are classified as either 'main river' or 'ordinary watercourses' (sometimes referred to as 'non-main rivers'). We control work (through land drainage consents) and supervise flood defence matters on all watercourses, but have special powers to carry out work on main river and sea defences. Local authorities have similar special powers for flood defence on ordinary watercourses and can also promote sea defence schemes.

Funding for capital improvement schemes is currently under pressure. Central Government grant aid has been reduced and the available money is now distributed according to national rather than regional priority. Alternative funding streams are being investigated for flood defence works; there has been a recent example of a successful bid for European funding.

When we design management systems for our flood defence work we fully consult conservation bodies. All options are explored when designing new schemes, including flood storage in wetlands if possible.

Flood alleviation schemes – Polperro flood alleviation scheme was completed in 1997 and demonstrated its effectiveness during exceptional downpours in November 1997, when the scheme was used for the first time and diverted millions of gallons of runoff.

Schemes at Fowey and Looe are included within the Medium Term Capital Programme. Before these schemes can be progressed each will have to be justifiable on cost-benefit grounds. The timing of the schemes will also be dependent on funding provided via Cornwall County Council and MAFF; therefore the start dates included in the action tables should be considered the earliest opportunity for work to commence. Detailed consultation with affected landowners and interested bodies will take place well in advance of any work taking place.

Status of current schemes – Fowey: A Pre-feasibility study has been completed and a report prepared. However the planned earliest start date for the works of 1999/2000 has been postponed until 2001/2002.

Looe: The current proposed earliest start date for the flood alleviation schemes is 2001/2002.

Lerryn: We are currently reviewing how we could fund this scheme.

Improvements to the bridge at Courtneys Mill to cope with higher flows are to be funded by the developer's contributions and therefore the timing of the works is unknown.

Flood warning – Leaflets are available showing the main rivers and coasts where a flood warning service is provided. A region-wide study into the current flood warning Level of Service is due to be completed by the end of 1999. The results from this study will identify locations where a service can be introduced or improved. Any improvements will be prioritised taking into account the needs of the whole region.

Maintenance – Regular maintenance is essential if the river system and sea defences are to operate properly at times of flood. Such maintenance works include vegetation control, repairs to earth embankments and other floodwalls, obstruction and blockage removal and dredging.

The cost of maintenance varies each year depending on need; it is generally in the order of £50,000. Annual conservation liaison meetings are held to outline our maintenance programme to external conservation bodies. Each year within this programme some conservation enhancements and recreational improvements are carried out.

Action	Targets	Environmental benefits	Responsible body and partners
Reduce flooding through construction of flood alleviation schemes at: Fowey Looe	Ongoing	Towards sustainable development	Agency
Determine future flood warning strategy and programme.	Following level of service study	Towards sustainable development	Agency

Issue 14 Waste management

Household, commercial and industrial wastes can be potentially polluting if not correctly managed. Certain particularly harmful materials are designated as 'special wastes' (see Glossary) and 90 per cent of these are exported from Cornwall for specialised treatment or disposal elsewhere at purpose-built facilities.

With the exception of household wastes, for which closely monitored collection and disposal contracts are in place, there is only sparse information on the types and quantities of wastes generated in Cornwall. Some estimates are being made as part of Cornwall County Council's waste management strategy in their Waste Local Plan for the county. The Environment Agency's forthcoming national survey of waste arisings will provide better data in future. The Agency is to prepare a Regional Waste Management Plan, based on the survey findings.

The Government has stated its intention to redefine mining, quarrying and agricultural wastes as 'controlled wastes' to be formally regulated by the Agency.

Provision of waste facilities – The County Council's Waste Local Plan for Cornwall will identify the criteria for the provision of sufficient and adequate facilities, as guidance to potential operators and to direct planning policy. Specific proposals will then be vetted by the County Planning Authority in consultation with the Agency. Due to pressures on facilities, including lack of landfill space, Cornwall County Council has had to embark on the production of a local Waste Strategy for consultation, ahead of national and regional plans.

There is an established hierarchy for planning of waste, from national strategy to regional and local planning. There is a requirement from the Agency to produce a regional strategy to outline the current and future needs for waste management. This work will be undertaken in two distinct phases: first, data on current requirements will be collected in a waste arisings survey. This information will also feed into the national strategy. The second stage is the production of the regional strategy. The survey is due to start this year.

Cornwall Waste Management Forum and Agency waste minimisation promotions – The Agency is a member of the Cornwall Waste Management Forum, a partnership with the six District Councils and the County Council, which works in collaboration with the Payback organisation in setting up Waste Minimisation Groups. Through our regular contact with businesses we are advising firms on their environmental management systems, including waste minimisation. The Agency has produced a Commercial Recycling Directory that will assist businesses in identifying recycling outlets for recoverable wastes. In time this will stimulate a need for new treatment and recovery facilities locally, to provide a more sustainable alternative than just landfill disposal. These waste minimisation initiatives have enabled many companies to discover scope for cost savings whilst changing their approach to waste and other emissions.

Connon Bridge Landfill – County Environmental Services (CES) have applied for a consent to discharge some treated leachate to the Connon Stream. Leachate has the potential to contain significant loadings of nutrients such as nitrate and other harmful chemicals. By employing precautionary principles in processing the application, it is believed that the Agency can require standards for the discharge that will lead to enhanced environmental protection compared with of the current system.

Waste to land – Land is already used for the disposal of agricultural and industrial wastes and sewage sludge. Poor waste management can result in pollution incidents. Waste applied to existing semi-natural habitats may result in a loss of conservation value through the potential build-up of nutrients in soil, surface or groundwater and decline of semi-natural vegetation. Certain controlled wastes spread on land for agricultural benefit are exempt from a formal waste management licence.

This is an issue we feel needs reviewing in a comprehensive and integrated way to ensure that the activity does not cause undue impact. Such a review will involve landowners, spreaders, MAFF and other interested parties and will follow the production of new national guidelines later this year.

Sewage sludge disposal to land – From 31st December 1998 the disposal of sewage sludges at sea will be prohibited by the EC Urban Waste Water Treatment Directive, thus increasing disposal to land. Good management practices and the use of existing codes will mean this could benefit the land agriculturally; however there is a risk of pollution if care is not taken.

Landfill Tax – The Landfill Tax was introduced in October 1996 and is payable by landfill operators to HM Customs & Excise for waste deposited in landfill sites. The tax is currently £7 per tonne for general waste and £2 per tonne for inert materials.

Fly-tipping – Fly-tipping occurs throughout the area, including hotspots in the Looe Valley and on Goonzion Downs. We will work with Caradon District Council to prevent further fly-tipping through publicity campaigns and enforcement.

Producer responsibility – The Producer Responsibility Obligations (Packaging Waste) Regulations 1997 have been compiled to ensure that the real environmental costs of producing, using and disposing of packaging falls directly on those who produce or use it. All businesses who fall within the regulations must either register with the Agency or join a business membership scheme. The Agency is the regulatory body for this legislation and offers advice on the regulations and their implementation.

Harbour waste management plans – The development of harbour waste management plans for Fowey and Looe are currently being progressed by the harbour authorities. The Fowey Harbour Commissioners have put into place an number of actions such as waste disposal facilities for visiting yachts.

Action	Targets	Environmental benefits	Responsible body and partners
Identification of new waste management sites through consultation on Cornwall Waste Local Plan.	Seek to ensure Agency interests are considered in local authority promotions.	Sustainable waste management	Cornwall County Council
Encourage recycling facilities.	Seek to ensure Agency interests are considered in local authorities promotions.	Sustainable waste management	Local authorities, Agency
Promote waste minimisation.	Seek to ensure Agency interests are considered in Local Authority promotions.	Sustainable waste management	Local authorities, Agency
Determination of consent at Connon Bridge.			Agency
Enforcement against fly-tipping, particularly in Looe Valley and Goonzion Downs.	Where opportunities arise	Improvement of aesthetics and local environment	Agency, Caradon District Council
Campaign to highlight fly-tipping problems.	Where opportunities arise	Improvement of aesthetics and local environment	Agency

Appendices

Appendix 1 The role of the Environment Agency

The Environment Agency has 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 is to do 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.

These are all dealt with by your local planning authority, who 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
Water Resources The Agency has a duty to conserve, redistribute, augment and secure the proper use of water resources.	• Grant or vary water abstraction and impoundment licences on application. • 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. • Secure the proper use of water resources through its role in water-resources planning, the assessment of reasonable need for abstractions and promotion of more efficient use of water resources. • Monitor and enforce abstraction and impoundment licence conditions.	• The more efficient use of water by water companies, developer's industry, agriculture and the public and the introduction of water-efficiency measures and suitable design and layout of the infrastructure.	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.
Flood Defence The Agency has a duty to exercise general supervision over all matters relating to flood defence throughout each catchment.	• Control, through Land Drainage consents, development or construction of a structure that would affect the flow of an ordinary watercourse (Water Resources Act 1991 Section 109, 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 river using permissive powers. • Issue flood warning relating to main river to the public, local authorities and the police. • Consent mineral workings within 16 metres of main river.	• 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 river. • 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.	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 of 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.

Agency Duty	The Agency has powers to:	The Agency has an interest (but no powers) in:	Partnership
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.	• 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. • Prosecute polluters and recover the costs of clean-up operations.	• The control of runoff from roads and highways. This is a Highway Agency duty. • The greater use of source-control measures to reduce pollution by surface-water runoff. • Prevention and education campaigns to reduce pollution incidents.	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.
Air Quality The Agency has a duty to implement Part 1 of the Environment Protection Act 1990.	• 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.	• The vast number of smaller industrial processes which are controlled by local authorities. • Control over vehicular emissions and transport planning.	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 on and contribute to the Government's National Air Quality Strategy.
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.	• To issue certificates to users of radioactive materials and disposers of radioactive waste, with an overall objective of protecting members of the public.	• The health effects of radiation.	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.

Agency Duty	The Agency has powers to:	The Agency has an interest (but no powers) in:	Partnership
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.	• Vary waste management licence conditions. • Suspend and revoke licences. • Investigate and prosecute illegal waste-management operations.	• 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.	The Agency will work with waste producers, the waste-management industry and local authorities to reduce the amount of waste produced, increase re-use and recycling and improve standards of disposal.
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.	• 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.	• Securing with others, including local authorities, landowners and developers, the safe remediation of contaminated land.	The Agency supports land remediation and will promote this with developers and local authorities and other stakeholders.
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.	• 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 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 12 species and one habitat.	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.

Agency Duty	The Agency has powers to:	The Agency has an interest (but no powers) in:	Partnership
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.	• 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 landscape impact of new development, particularly within river corridors. This is controlled by local planning authorities.	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.
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.	• The Agency must promote its archaeological objectives though the exercise of its water-management and pollution-control powers and duties.	• Direct protection or management of sites of archaeological or heritage interest. This is carried out by local planning authorities, County Archaeologists and English Heritage.	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.
Fisheries The Agency has a duty to maintain, improve and develop salmon, trout, freshwater and eel fisheries.	• Regulate fisheries by a system of licensing. • Make and enforce fisheries byelaws to prevent illegal fishing. • Promote the free passage of fish and consent fish passes. • Monitor fisheries and enforce measures to prevent fish-entrainment in abstractions. • Promote its fisheries duty by means of land-drainage consents, water abstraction applications and discharge applications.	• The determination of planning applications which could affect fisheries.	Many development schemes have significant implications for fisheries. The Agency will work with anglers, riparian owners, developers and local authorities to protect fisheries.
Recreation The Agency has a duty to promote rivers and water space for recreational use.	• The Agency contributes towards its recreation duty through the exercise of its statutory powers and duties in water management.	• Promotion of water sports. This is carried out by the Sports Council and other sports bodies.	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.

Appendix 2 River Fowey salmonid catch data

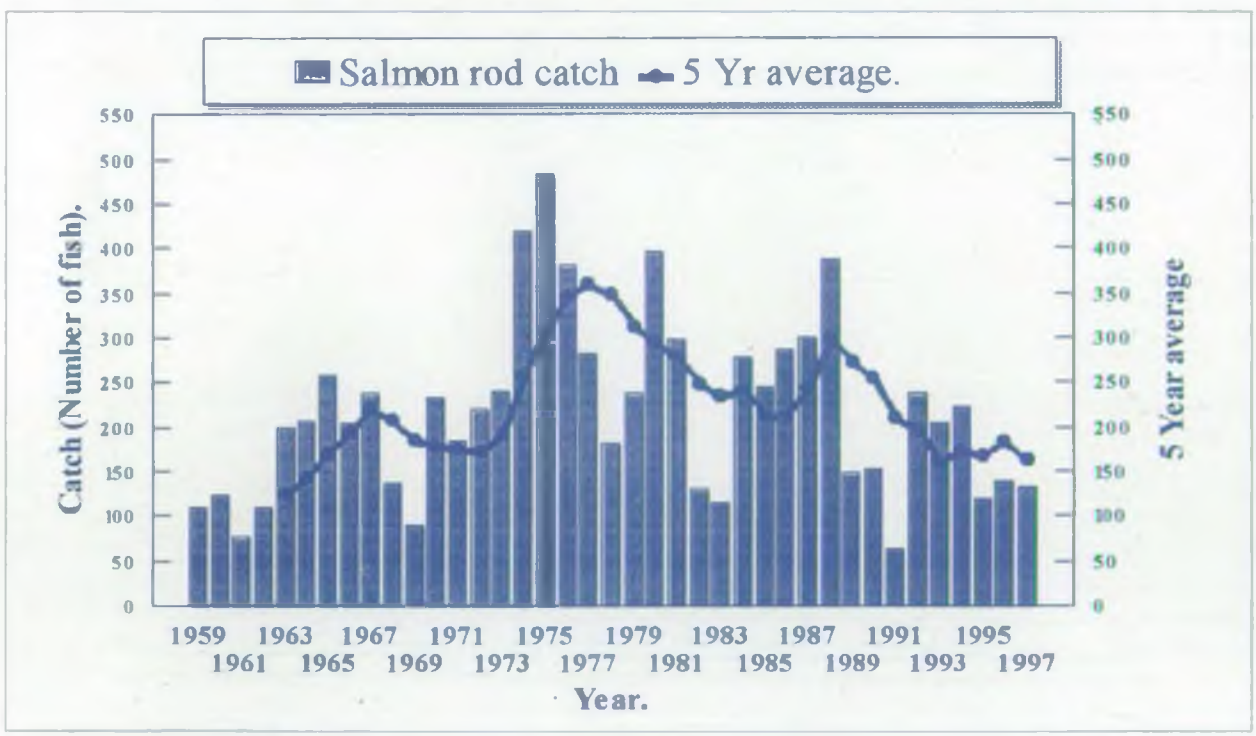
Rod catches – The River Fowey is a noted 'late' salmon river in which salmon, predominantly grilse in the range of 7 to 20 pounds, enter the river within the period September to January. The fishing season closes on 15 December. The River Fowey has historically been noted for its very large runs of sea trout. Large sea trout are known to enter the river early in the months of April and May, with the larger runs of school sea trout taking place in July. Rod catches recorded from the River Fowey since 1959 are presented in Figure 1 (salmon) and Figure 2 (sea trout) respectively.

Salmon rod catches – Figure 1 indicates that the River Fowey salmon rod catch rose between 1959 and 1976. This situation may reflect increasing angling participation or improved rod-catch return rates.

The most notable feature of the River Fowey salmon rod catch is the year-to-year variability in the data. This most likely reflects the fishery's dependence upon the availability of suitable flow levels that affect not only fish-taking behaviour but also the availability of fish within freshwater during the fishing season. As on other spate salmon rivers, low rod catches are nearly always recorded in drought years. Year-to-year variability can to a certain extent be reduced by observing the running 5-year average. This has been provided on Figures 1 and 2 and helps to identify trends within the data.

The Fowey rod catch data indicate that there has been an overall decline in the Fowey rod catch since the mid-1970s. This is consistent with other South West

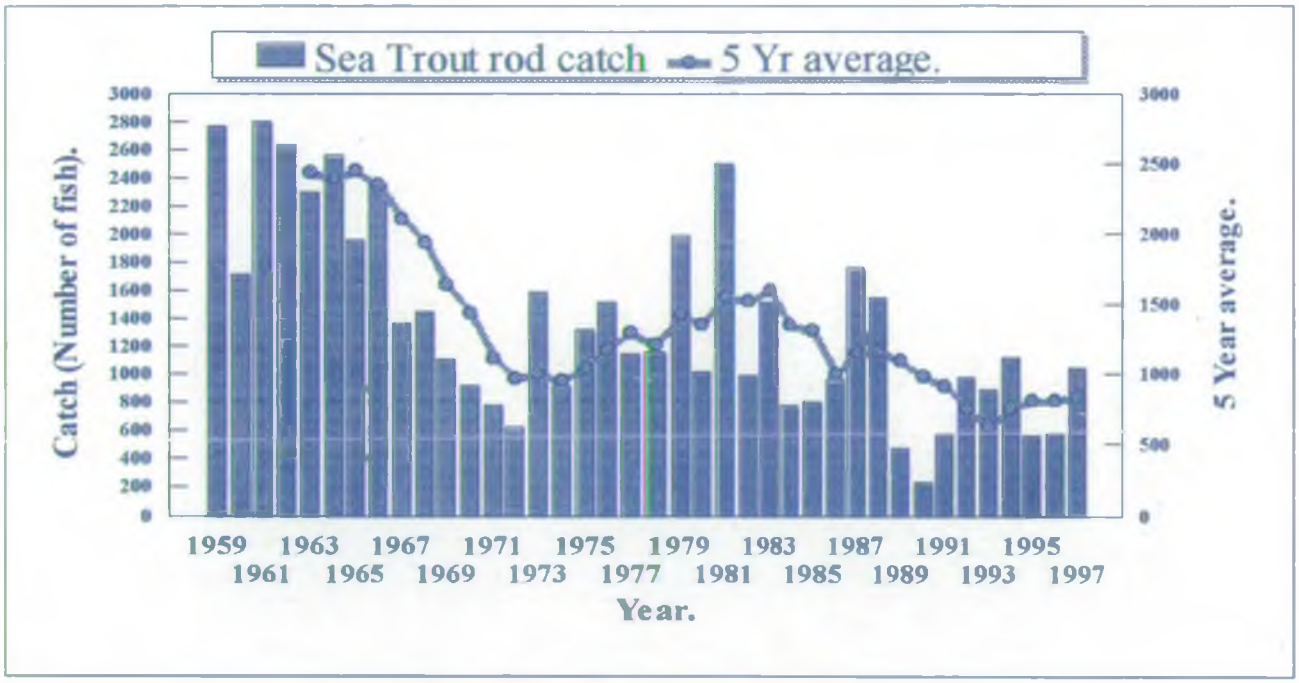
Figure 1 Total declared rod catch of salmon for the River Fowey- 1959 to 1997.



rivers and coincides with the introduction of monofilament gill nets; the prevalence of UDN that affected many South West rivers in the 1970s; and increasing commercial pressure on the high seas, notably for grilse off the west coast of Ireland.

Despite the reducing trend since the 1970s there has been a more definitive decline in catches from 1989 and 1990. From this point catches have fallen dramatically and although they improved in the relatively wet years of 1993 and

Figure 2 Total declared rod catch of sea trout for the River Fowey- 1959 to 1997.



1994, catches have since fallen back. The extent of the decline can be appreciated by comparing the total declared rod catches for the period from 1988 to 1997.

Sea trout rod catches – As with the salmon rod catch, it is apparent from Figure 2 that the sea trout rod catch has declined significantly since the mid-1960s, reaching a low point in the early 1970s. Over the following decade catches again began to improve, with the catch in 1981 being consistent with those from the early 1960s, i.e., in excess of 2,000. Despite this improvement, the sea trout rod catch has continued to exhibit an overall declining trend since this time. This observed reduction has also been mirrored in juvenile populations, notably on the Warleggan, Cardinham and St Neot tributaries. The 1997 sea trout run provided a catch that was consistent with the previously recorded highest catches in the last 10 years. However, this is still only 25 per cent of the catch that was recorded 20 years ago.

Summary – There has been a substantial decline in catches over the last 20 years. This decline became more intense in 1989 and 1990 and the catches from these years were among the lowest ever recorded. The current (1997) rod catches are consistent with those within the last 10 years but are still far short of historical catches.

Salmon net catches – Like the salmon rod catch data, the net catch also displays a large amount of variability on an annual basis. This variability is likely to reflect freshwater flows within the estuary.

The net catch achieved in 1989 was consistent with the highest recorded net catch within the last 20 years. Despite this, a decline coincided with the 1989/90 drought. There was some resurgence in the relatively wet years of 1993 and 1994. The net catch in the 1995 drought year was low. The net catches in 1996 and 1997 have been the lowest on record and it is likely that this reflects both a lack of salmon and the reduction in licensed nets (after 1997).

Seatrout net catches – The net catch for sea trout has declined in a similar fashion to that of salmon. This decline has been most evident within the last 10 years. This may reflect a combination of reduced netting effort and the lower availability of larger sea trout.

Figure 3 Total declared net catch of salmon for the River Fowey- 1959 to 1997.

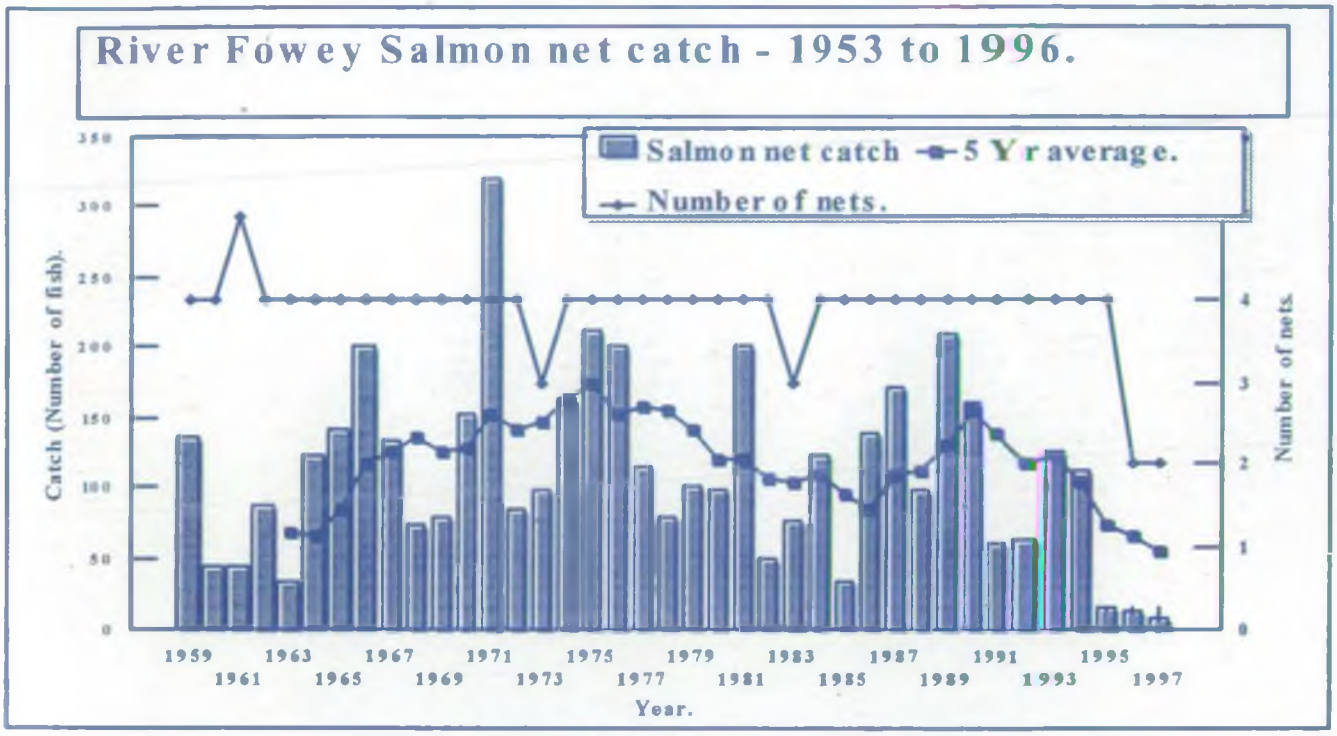
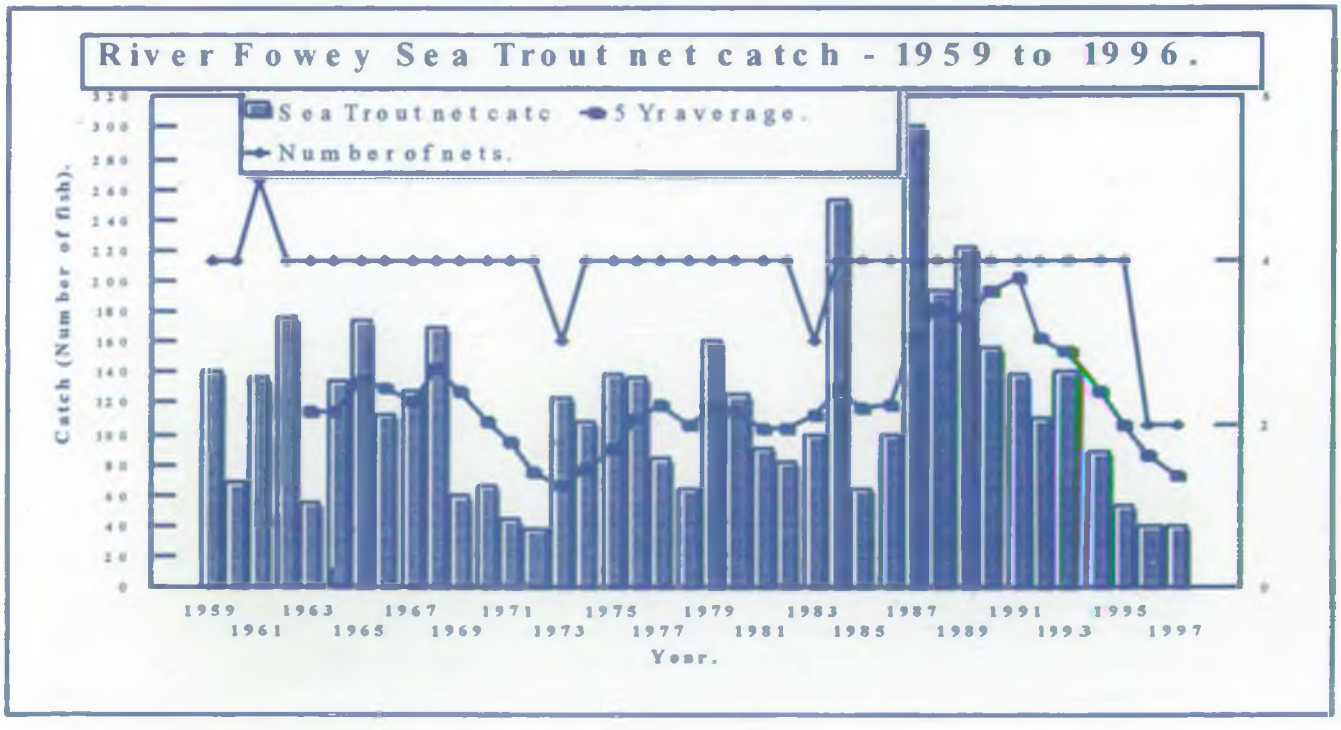


Figure 4 Total declared net catch of sea trout for the River Fowey- 1959 to 1997.



Appendix 3 The quality of surface waters

River Quality Objectives – We manage water quality by setting targets called River Quality Objectives (RQOs). They are intended to protect current water quality and future use, and we use them as a basis for setting consents for new discharges and planning future water-quality improvements.

The classification scheme known as the River Ecosystem (RE) Classification was introduced by the National Rivers Authority, following public consultation, in 1994. It replaces a former scheme introduced by the Water Authorities in the late 1970s and used by the NRA until 1994. The RE Classification comprises five hierarchical classes, as summarised below.

PRIVATE RQO (RE Class)	Class Description
RE1	Water of very good quality suitable for all fish species
RE2	Water of good quality suitable for all fish species
RE3	Water of fair quality suitable for high class coarse fish populations
RE4	Water of fair quality suitable for coarse fish populations
RE5	Water of poor quality which is likely to limit coarse fish populations

The RQOs we set must be achievable and sustainable; we must be able to identify what needs to be done to meet the RQO and to ensure as far as practicable that water quality can be maintained at this level in the future.

Where we are unable to identify solutions or resources to resolve current water quality problems, we may also set a Long Term RQO. We will measure compliance against RQOs but use Long Term RQOs as a basis for setting consents for new discharges and reviewing, where appropriate, existing discharges. This will ensure that future developments will not prevent us from achieving our long term objectives.

In certain circumstances we can 'set aside' data; that is, we will not take into account some or all of the results of a particular determinand when we assess compliance with an RQO. We will set aside data where high concentrations of metals or low pH are caused by the natural geology of the catchment. This allows us to protect good water quality reflected by other parameters in the RE classification.

The assessment of compliance with RQOs is based on three years of routine monitoring data from the Public Register, collected between 1995 and 1997. Failures to meet RQOs are separated into *significant* and *marginal* failures. Significant failures are those where we are 95 per cent certain that a river stretch has failed to meet its RQO and marginal failures are those where we are less certain (between 50 per cent and 95 per cent) that a stretch has failed to meet its RQO.

The rivers of the Seaton, Looe and Fowey Catchment have been divided into 38 classified reaches. RQO classification and compliance in each stretch is shown in the table below and on Map 4. The failing parameter is also shown in the table below (BOD stands for biochemical oxygen demand; TA for total ammonia):

River	Stretch	RQO (LT RQO)	Set aside	Non-compliant stretches and falling parameter
Seaton	Source-Crow's Nest	1	Dissolved copper, total zinc, pH	
Seaton	Crow's Nest-Hendra Bridge	1	Dissolved copper	
Seaton	Hendra Bridge-Courtneys Mill Bridge	1		
Seaton	Courtneys Mill Bridge-Hessenford	1		BOD (marginal)[1]
Seaton	Hessenford-Normal Tidal Limit	1		
Menheniot Stream	Source-Seaton Confluence	1		BOD/TA (marginal)[2]
Tremar Stream	Source-Seaton Confluence	2		
East Looe River	Source-Looe Mills	1		
East Looe River	Looe Mills-Below Moorswater	1		BOD (significant)[3]
East Looe River	Below Moorswater-Lamellion Mill	1		
East Looe River	Lamellion Mill-Below Liskeard STW	2		BOD (marginal)[2]
East Looe River	Below Liskeard STW-Trussel Bridge	2		BOD (marginal)[2]
East Looe River	Trussel Bridge-Landlooe Bridge	1		
East Looe River	Landlooe Bridge-Normal Tidal Limit	1		
Dobwalls Stream	Source-East Looe Confluence	1		
West Looe River	Source-Scawn Mill Bridge	1		
West Looe River	Scawn Mill Bridge-Churchbridge	1		
West Looe River	Churchbridge-Normal Tidal Limit	1		
Connon Stream	Source-Above Connon Bridge Landfill Site	2		
Connon Stream	Upstream Connon Landfill - Downstream Connon Landfill	2		
Connon Stream	Downstream Connon Landfill-Trevillis Wood	2		
Connon Stream	Trevillis Wood-West Looe Confluence	2		
Polperro River	Source-Normal Tidal Limit	2		
Fowey	Source-Harrowbridge	1	pH	
Fowey	Harrowbridge-Draynes Bridge	1	pH	
Fowey	Draynes Bridge-Bodithiel Bridge	1		
Fowey	Bodithiel Bridge-Respryn Bridge	1		
Fowey	Respryn Bridge-Normal Tidal Limit	1		
Pont Pill	Source-Normal Tidal Limit	1		
Trebant Water	Source-Normal Tidal Limit	1		BOD (marginal)[1]
Lerryn River	Source-Normal Tidal Limit	1		BOD (marginal)[1]
Bedellva Stream	Source-Lerryn Confluence	2 [1]	pH	TA (marginal)[1] [TA (significant)/ BOD (marginal)][1]
Cardinham Water	Source-Fowey Confluence	1		
Warleggan River	Source-Fowey Confluence	1		
St Neot River	Colliford Lake-Colliford Bridge	1	pH	
St Neot River	Colliford Bridge-Fowey Confluence	1		
Northwood Stream	Source-Fowey Confluence	1	pH	
Siblyback Stream	Siblyback Reservoir-Fowey Confluence	1		

Notes: 1: See Issue 7. 2: See Issue 5. 3: A discharge from Moorswater Driers caused a non-compliance due to ammonia which has now ceased and thus is no longer an issue.

EC Directives

We also manage water quality by applying standards set in EC Directives and other international commitments. Those that apply to the Seaton, Looe and Fowey catchment are detailed in the following sections.

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

We are responsible for monitoring the quality of identified, popular bathing waters and providing the results to DETR who decide whether the standards in the Directive have been met. Where identified bathing waters fail to meet the Directive, we are responsible for identifying sources of pollution that are causing failures, and making sure that improvements are made.

There are 5 identified Bathing Waters in the catchment: Downderry, Seaton, Millendreath, East Looe and Readymoney Cove. These are all shown on Map 3. There have been Bathing Waters Directive failures at Seaton (1992), East Looe (1993, 1996, 1997) and Readymoney (1991, 1993, 1997). **See Issues 7 and 8**.

EC Freshwater Fish Directive – The EC Directive on *the quality of waters needing protection or improvement in order to support fish life* (78/659/EEC) ensures that water quality in designated stretches is suitable for supporting certain types of fish.

This Directive contains two sets of quality standards. One set of standards protects cyprinid or coarse fish populations, for example roach and chub. The other set of stricter standards protects salmonid or game fish populations, for example salmon and trout.

We are responsible for monitoring the quality of identified fisheries and reporting the results to DETR who decide whether the standards in the Directive have been met. Where the requirements of this Directive are not met, we are responsible for identifying sources of pollution and making sure that improvements are made.

There are 8 Freshwater Fisheries stretches in the catchment; all are designated as salmonid. The location of these stretches is shown on Map 3. All designated stretches were compliant with the Freshwater Fish Directive in 1995, 1996 and 1997.

EC Surface Water Abstraction Directive – The EC Directive *concerning the quality required of surface water intended for the abstraction of drinking water in the Member States* (75/440/EEC) protects the quality of surface water used for public supply. This Directive ensures that water abstracted for public supply meets certain quality standards and is given adequate treatment before entering public water supplies.

The Directive sets out standards that must be achieved, for water for public supply which is to be given different levels of treatment.

We are responsible for monitoring the quality of designated surface water abstractions and reporting the results to DETR who decide whether the standards in the Directive have been met. Where standards are not met, we are responsible for identifying sources of pollution and making sure that improvements are made.

There are 3 identified Surface Water Abstraction sites in the Seaton, Looe and

Fowey catchment. These are at the Colliford Reservoir and on the River Fowey at Trekeive Steps and at Restormel; all are shown on Map 3.

From 1995 to 1997, the only cases of non-compliance with the Directive occurred due to the natural geology of the catchment and due to methodological constraints. Such failures are not a cause for concern and thus are not a catchment issue.

EC Dangerous Substances Directive – The EC Directive *on pollution caused by certain substances discharged in the aquatic environment of the community* (76/464/EEC) protects the water environment by controlling discharges to rivers, estuaries and coastal waters.

This Directive describes two lists of compounds. List I contains substances regarded as particularly dangerous because they are toxic, they persist in the environment and they bioaccumulate. Discharges containing List I substances must be controlled by Environmental Quality Standards (EQSs) issued through Daughter Directives. List II contains substances which are considered to be less dangerous but which can still have a harmful effect on the water environment. Discharges of List II substances are controlled by EQSs set by the individual Member States.

We are responsible for authorising, limiting and monitoring dangerous substances in discharges. We are also responsible for monitoring the quality of waters receiving discharges which contain dangerous substances and reporting to DETR who decide whether the standards in the Directive have been met. Where the requirements of this Directive are not met, we are responsible for identifying sources of pollution and making sure that improvements are made.

We monitor 2 designated sites for List I substances in the Seaton, Looe and Fowey catchment; these are the Looe STW's effluent and a site 250m downstream of the discharge. Both are monitored for Hexachlorocyclohexane (HCH). The Looe STW effluent is also monitored for List II substances along with a site on the East Looe River downstream of the Moorswater China Clay Driers. These are both monitored for Arsenic, Chromium, Copper, Lead, Nickel and Zinc. The Moorswater site is also monitored for pH. All Dangerous Substances sites are shown on Map 3. In addition to designated Dangerous Substances sites, we also monitor 2 National Network sites in the Seaton, Looe and Fowey catchment. These are at Railway Halt on the East Looe River and in the Combined Looe Estuary; both are monitored for all List I substances.

All Dangerous Substances sites were compliant from 1995 to 1997; however, the National Network site in the Looe Combined Estuary was non-compliant for HCH in 1995. This non-compliance was caused by a single sample showing a gross concentration of HCH. In response to this, effluent from Looe STW was monitored for HCH, as were the receiving waters. No further elevated levels of HCH have been detected in the estuary and the STW effluent has not shown any significant concentrations of HCH. The assumption has been made that the elevated HCH in 1995 was the result of a spillage and therefore this is not considered to be an issue.

EC Urban Waste Water Treatment Directive – The EC Directive *concerning urban wastewater treatment* (91/271/EEC) specifies minimum standards for sewage treatment and sewage collection systems.
This Directive specifies that secondary treatment must be provided for all discharges serving population equivalents greater than 2,000 to inland waters and estuaries, and greater than 10,000 to coastal waters. Discharges below these population equivalents receive appropriate treatment as defined in the AMP2 guidance note. We are responsible for making sure that discharges receive the level of treatment specified in this Directive.

This Directive also requires higher standards of treatment for discharges to *sensitive areas* and allows lower standards of treatment to *less sensitive areas*. Sensitive areas are those waters that receive discharges from population equivalents of greater than 10,000 and are eutrophic or may become so in the future.

The DETR decide if a watercourse is sensitive, based on monitoring information provided to them by the Environment Agency. We also ensure that discharges to sensitive areas receive a higher level of treatment.

Less Sensitive Areas or *High Natural Dispersion Areas (HNDAs)* are those estuarine or coastal waters which are naturally very dispersive. In these areas a lower level of sewage treatment may be permitted. However, dischargers must demonstrate that no harm will be caused to the environment by the lower level of treatment. We are responsible for auditing the results of these studies.

There are currently no sensitive area designations in the Seaton, Looe and Fowey catchment. However, monitoring is being carried out to determine whether a sensitive area designation should be sought for the East Looe River from Liskeard (Lodge Hill) STW to the Normal Tidal Limit. **See Issue 7**.

Several sewage treatment works have been identified as requiring improvements under AMP3; these are shown in the table below, along with the reasons why improvements are required. **See Issue 7**.

STW	Statutory driver: UWWTD	Non-statutory driver: (e.g. Long Term RQO)
St Cleer	Aesthetic impact from storm discharge	Current consent does not protect downstream Long Term RQO. A tightening of the BOD and ammonia standards is required.
Pelynt		Current consent does not protect downstream Long Term RQO. A tightening of the BOD and ammonia standards is required.
Bodinnick	Appropriate treatment	
Golant	Appropriate treatment	
Polperro	Appropriate treatment	Higher level of improvement required.

EC Shellfish Hygiene Directive – The Shellfish Waters Hygiene Directive *laying down the health conditions for the production and the placing on the market of live bivalve molluscs* (91/492/EC) protects the health of consumers of live bivalve molluscs such as mussels and oysters. This Directive defines standards for shellfish quality required in the end product. It also classifies bivalve mollusc shellfish harvesting areas into four categories according to the concentrations of bacteria found in the shellfish flesh.

The Ministry of Agriculture, Fisheries and Food (MAFF) and the Department of Health share responsibility for this Directive in England and Wales. We have only a minor role in implementing this Directive. Although we provide information on the location of discharges that may affect harvesting areas, we cannot control the quality of the polluting discharges under this Directive.

Pont Pill, a creek of the Fowey estuary, is used for the culture of Pacific oysters (*Crassostrea gigas*) and clams. This site is in a non-designated area in terms of the Shellfish Waters Directive. It achieved a B classification in 1997.

EC Shellfish Waters Directive – The Shellfish Waters Directive *on the quality required of shellfish waters* (79/923/EEC) protects shellfish populations (defined as bivalve and gastropod molluscs) from harm caused by pollution. We are responsible for monitoring the quality of designated shellfish waters and reporting the results to DETR who decide whether the standards in the Directive have been met. Where standards are not met, we are responsible for identifying sources of pollution and making sure that improvements are made.

The Shellfish Waters Directive aims to protect shellfish health and is therefore the tool for regulating potentially harmful discharges.

At present, no Shellfish Waters sites have been identified in the Seaton, Looe and Fowey catchment. However, DETR have recently initiated consultation on designating further Shellfish Waters sites in England and Wales; this consultation will include sites in the Seaton, Looe and Fowey catchment. **See Issue 6**.

Appendix 4 Supporting information: The quality of groundwaters

The Agency has a need to monitor the quality of groundwater through a number of responsibilities. These include our general duty to monitor pollution to controlled waters, and our responsibility to monitor under the Regulations which implement the EC Nitrate Directive (although DETR has decided that for the time being the Directive sampling will all come from water company boreholes). At present we have no nationally agreed network for groundwater sampling, but studies have been carried out to say what the needs would be. The collection of groundwater quality data in the catchment is at present limited.

The effect of this lack of data is that the Agency is not able to comment authoritatively on the state of groundwater, or to note any significant trends in change in quality, which might indicate an adverse effect of human activity. It is proposed to begin development of a more rigorous monitoring network, based where possible on existing supply boreholes, in line with the recommendations made by the British Geological Survey in 1994.

A revised version of the Agency's Policy and Practice for the Protection of Groundwater has recently been published.

Abbreviations

AMP	Asset Management Plan
BAP	Biodiversity Action Plan
BATNEEC	Best Available technology Not Entailing Excessive Cost
BPEO	Best Practicable Environmental Option
CES	County Environmental Services
CSFC	Cornwall Sea Fisheries Committee
CSO	Combined sewer overflow
CWT	Cornwall Wildlife Trust
DETR	Department of Environment Transport and Regions
ECCI	English China Clay International
EU	European Union
FWAG	Farming and Wildlife Advisory Group
HSE	Health and Safety Executive
IPC	Integrated Pollution Control
LPA	Local Planning Authority
MAFF	Ministry of Agriculture, Fisheries and Food
Ml	Megalitre (=1 million litres)
NASCO	North Atlantic Salmon Conservation Association
ng/l	nanograms per litre
RQO	River Quality Objective
SAFFA	Salmon and Freshwater Fisheries Act
SMP	Shoreline Management Plan
SSSI	Special Site of Scientific Interest
STW	Sewage Treatment Works
SWRA	South West Rivers Association
SWWL	South West Water Services Limited
TBT	Tributyltin
UV	ultra-violet
VMCA	Voluntary Marine Conservation Area
VMCCA	Voluntary Marine and Coastal Conservation Area
WCRT	West Country Rivers Trust

Glossary

ABSTRACTION
Removal of water from a surface or groundwater source of supply.

ADIT
Gently sloping passage from mine workings into valley areas to allow water to drain out of the workings (the downstream entrance is called the adit portal).

ALGAL BLOOMS
A visible, often seasonal occurrence of very large numbers of algae floating in fresh water or sea.

ANTHROPOGENIC
Resulting from or influenced by man's activities.

ARISINGS
Quantities of waste being generated.

AQUIFER
Layer of porous rock able to hold and transmit water. Often classified as major, or minor, depending on the extent to which they support higher-yielding borehole systems.

BASEFLOW
The flow in a river comprising emergent groundwater sources. In dry conditions river flows consist entirely of baseflow.

BIOACCUMULATION
Concentration of pollutant substances, such as metals, within the tissues of organisms.

BIOCHEMICAL OXYGEN DEMAND (BOD)
A measure of the amount of oxygen consumed in water, usually as a result of organic pollution.

BRYOPHYTES
Mosses and liverworts.

BUFFER ZONE
Strip of land 10-100m wide alongside rivers, which is removed from intensive agricultural use and managed to provide appropriate habitat types. Benefits include potential reduction of inputs into the river such as silt, nutrients and livestock waste, as well as improving habitat diversity and landscape.

CLITTER
Clitter (the local name for scree) is the accumulation formed by fragments of rock resulting from mechanical weathering. In the case of clitter, Periglacial weathering has caused its formation.

COMPENSATION FLOW
A defined release from a reservoir to compensate for the impact of the impoundment by maintaining a minimum flow in the river downstream.

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

CONTROLLED WASTE
Waste from household, commercial or industrial sources; it may be solid or liquid. It does not have to be hazardous or toxic.

CULM MEASURES
A distinct area of North East Cornwall, extending into Devon, characterised by poor soils and rushy pastures. The Culm Measures contain many important habitats and species.

CULVERT
Channel or conduit carrying water across or under a road, canal etc.

DETERMINAND
That which is to be determined or measured.

DROUGHT ORDER
Drought Orders are made by the Secretary of State upon application by the Environment Agency or a water undertaker, under powers conferred by Act of Parliament, to meet deficiencies in the supply of water due to exceptional shortages of rain. The terms and conditions under which Drought Orders may be obtained are given in Sections 73-81 of the Water Resources Act 1991 and Schedule 22 Section 139 of the Environment Act 1995. Drought Orders are sub-divided into 'Ordinary' and 'Emergency' Drought Orders. A Drought Order could contain provisions such as: to authorise abstraction from an unlicensed source, override the conditions on an existing abstraction licence, limit the amount of water which may be taken from a source, vary discharge conditions or might allow the prohibition of use of water for particular purposes, to allow a ban on non-essential use of water (for example in car washes) or to introduce the use of stand-pipes.

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

EUTROPHICATION
The natural ageing of a lake or landlocked body of water results in organic material being produced in abundance due to a ready supply of nutrients accumulated over the years. Eutrophication can be greatly increased as a result of nitrate and phosphates in fertiliser runoff or sewage treatment works.

FLUVIAL
Pertaining to river flow and its erosive activity.

GRILSE
Atlantic salmon that have remained in the sea for only one winter.

LICENCE OF ENTITLEMENT
Licence granted under Schedule 26 of the Water Act 1989 in respect of a previously exempt abstraction greater than 20m³/day which required a licence by virtue of an amendment to Section 24(2) and (3) of the Water Resources Act 1963. (This only covered particular domestic and agricultural uses, including fish farming and flows to domestic amenity ponds).

MAIN RIVER
Some, but not all, watercourses are designed as 'Main River'. 'Main River' status of a watercourse must first be approved by MAFF. Statutory (legally binding) maps showing the exact length of 'Main River' are held by MAFF in London and the Environment Agency in Regional Offices. The Environment Agency has the power to carry out works to improve drainage or protect land and property against flooding on watercourses designated as 'Main River'. The Environment Agency do not have the legal power to spend public funds on drainage or flood protection works on watercourses not designated as 'Main River'.

NATURAL AREA
The whole of England has been described as a series of ecologically distinct areas following survey work by English Nature.

NUTRIENT
Conveying, serving as, or providing nourishment.

PARR
Juvenile salmonids aged one year and older.

PAYBACK
The consultancy service of Groundwork Trust for Devon & Cornwall. They carry out waste audits for business.

PERMEABILITY
A measure of the ease with which liquids (or gases) can pass through rocks or a layer of soil.

PRESCRIBED FLOW (pf)
Flow below which a river must not be reduced as a result of licensed abstraction.

REDD
Hollow created in riverbed gravels by spawning salmonid fish into which the female deposits ova.

RIPARIAN OWNER
Owner of riverbank and/or land adjacent to a river. Normally owns riverbed and rights to at least midline of channel.

RIVER CORRIDOR
Land which has visual, physical or ecological links to a watercourse and which is dependent on the quality or level of the water within the channel.

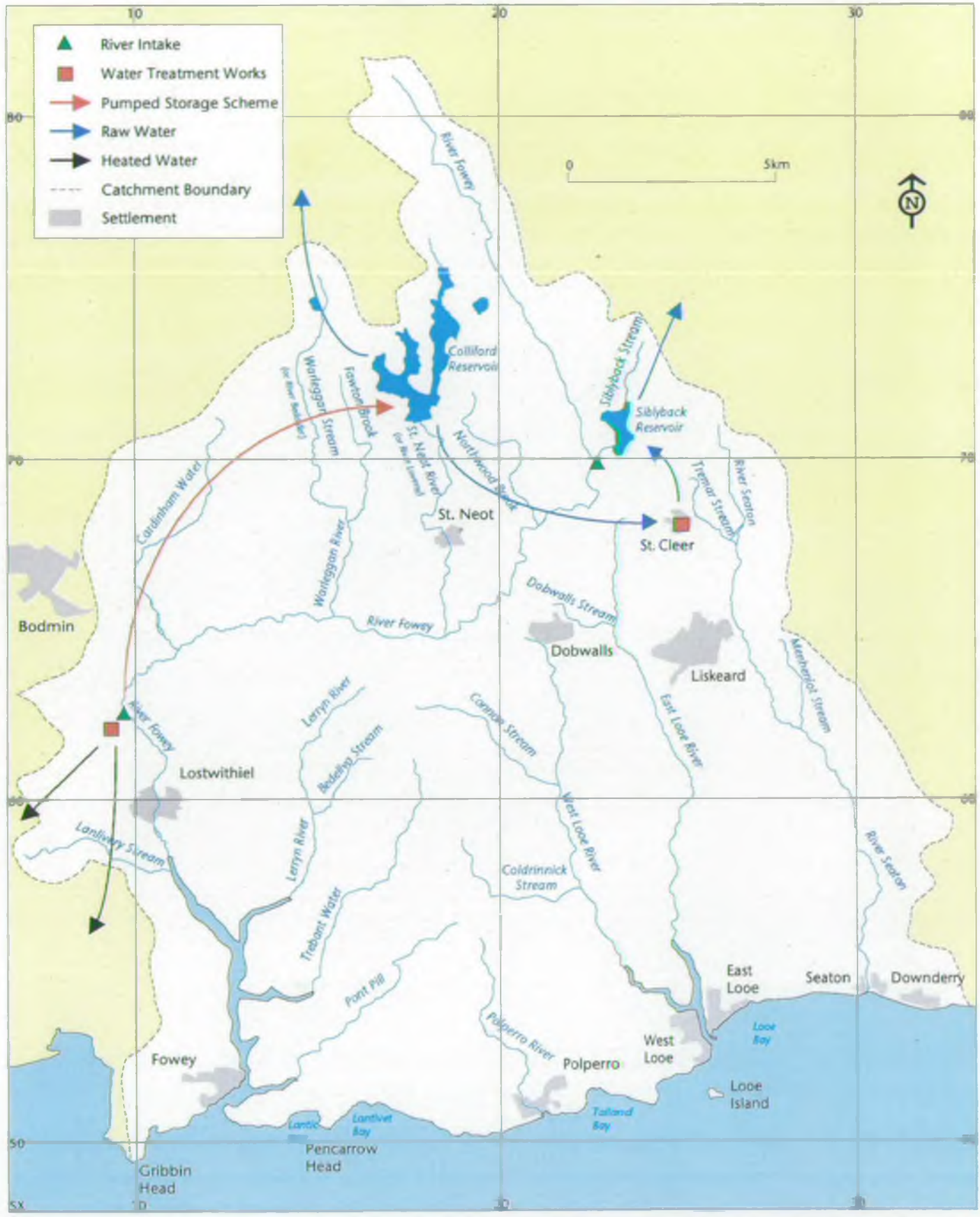
SALMONID
Game fish of the salmon family, e.g. salmon, brown trout and sea trout.

SMOLTS
Young salmonids migrating to sea for the first time and adapted to life in salt water.

SPECIAL WASTES
These are the most hazardous or toxic wastes. Some common special wastes are: acids, alkaline solutions, oil fly ash, industrial solvents, oily sludge, pesticides, pharmaceutical compounds, photographic chemicals, waste oils and wood preservatives.

Map 4 - Compliance with River Quality Objectives

Map 5 - Colliford Lake and Siblyback Reservoir Scheme



MANAGEMENT AND CONTACTS:

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

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

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