

Box 13

# local environment agency plan

## WEST CORNWALL

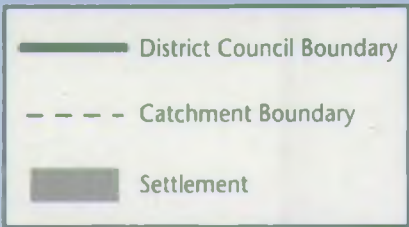
### ACTION PLAN

JANUARY 1998



ENVIRONMENT  
AGENCY

# Map 1 - West Cornwall Catchment







# map 1

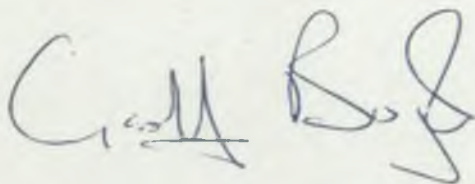
Fold out for Map 1  
West Cumbria Catchment

EA-South West LEAPs/102 ✓

## Foreword

This Action Plan sets out the tasks that the Agency and others will carry out over the next five years. The actions address problems that arise from the pressures on the environment, and seek new opportunities to enhance it. Other solutions will be looked at in a longer-term perspective or a wider area. The effects of these issues on the area are also described.

We thank all who responded during the consultation period for this action 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

Further copies of this Action Plan are available from:

Team Leader, LEAPs  
Environment Agency  
Sir John Moore House  
Victoria Square  
Bodmin  
Cornwall PL31 1EB

Tel: 01208 78301 Fax: 01208 78321

Environment Agency Copyright Waiver

ENVIRONMENT AGENCY



009052

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

# Contents

1. Vision	1
2. Introduction	2
3. Review of the Consultation Process	4
4. Catchment Overview	5
5. Protection through Partnership	8
6. Activity Tables	10
6.1 Effects of sewage discharges	10
6.2 Management of Loe Pool	12
6.3 Protection of habitats, wildlife and historic features	13
6.4 Fisheries management	16
6.5 Sea level rise	18
6.6 Farming	18
6.7 Metalliferous mining	20
6.8 Flood defence	21
6.9 Development control	22
6.10 Meeting current and future demand for water	23
6.11 Waste management	25
6.12 Effects of Penzance Dry Dock	27
6.13 Quality of surface waters	27
6.14 Air quality	28
Appendix 1: The Role of the Environment Agency	29
Appendix 2: Consultees who responded to the public consultation	31
Appendix 3: River Quality Objectives	31
Appendix 4: Development	32
Appendix 5: Sites of Special Scientific Interest	33
Appendix 6: Guide to Consultation Report and Action Plan Issues	34
Glossary	35
Abbreviations	36



## 1. 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.

# Vision

## 2. Introduction

### 2.1

#### The Environment Agency

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

#### Our Principal Aim

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

#### Our Objectives

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

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

#### Our Role

Our work is divided into seven main functions:

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

These roles are explained in further detail in Appendix 1.



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

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

This Action Plan follows the production of the West Cornwall Consultation Report and the consultation period. The Action Plan will form the basis for improvements to the environment and primarily covers the five year period from 1998 to April 2002. Achievement of the Action Plan will be monitored and reported annually. Future annual reviews will include new issues as they arise.

### The Catchment Steering Group

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

Name	Representing
Dr CV Phillips	Camborne School of Mines, University of Exeter
Mr M Mountjoy	Regional Fisheries Advisory Committee
Mr R Angove	National Farmers Union
Mr K Varnals	St Ives Hoteliers Association
Mr D Flumm	Royal Society for the Protection of Birds
Dr L Salter	Cornwall College
Cllr N Richards	Member, Penwith District Council
Mr C Underwood	South West Water
Mr B Collins	Kerrier District Council
Mr M Nesbit	Penwith District Council
WO L Phillips	RNAS Culdrose
Mr W Knott	Marazion Angling Club
Mr M Johnson	Riparian Owner
Mr D Davies	Helston School
Cllr ML Clayton	Member, Kerrier District Council

### 3. Review of the Consultation Process

#### 3.1

#### Public Consultation

The issues listed in this Action Plan were identified in the Consultation Report or resulted from the consultation process. The West Cornwall LEAP Consultation Report was launched on 25 June 1997. The consultation period closed on 22 August 1997. During this time the Consultation Report was promoted by:

- Radio, television and press reports;
- Advertisements in local newspapers
- Displays at Helston, St Ives, Camborne and Penzance, with Agency staff available to answer questions on specified days;
- The distribution of over 500 copies of the reports.

#### Results of Consultation and Further Action

A Statement on Consultation was produced in November 1997 and was distributed to all respondents. Copies are available on request from the address on the back of this plan.

Thirty written responses were received of which 13 were questionnaire replies. The respondents included statutory organisations, industry, landowners, sport and recreation groups and the public (see Appendix 2).

Several organisations indicated their strong support for the concept of catchment management planning. Our vision for the catchment was shared or fully supported by a large number of organisations. All comments have been considered and, where appropriate, incorporated in the Action Plan. Two additional issues have been added but many have been modified in response to the comments received and the negotiations which followed the end of the consultation period.

Many suggestions were received regarding the wording and the layout of the Consultation Report. Although we will not republish the report, we will use some of the ideas suggested in future publications.

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

- Impact of agriculture and horticulture;
- Generation and management of wastes;
- Effects of sewage discharges;
- Protection of habitats, wildlife and historic features;
- Meeting public water supply demand;
- Impact of development;
- Impacts on freshwater and estuarine fisheries.

We list actions to tackle these issues, amongst others, in the Activity Tables in Section 6.



## 4. Catchment Overview

The proximity of the sea gives the area much of its character and colours its way of life. Historic mining has left a legacy of old mines, adits and spoilheaps, particularly in the Camborne/Redruth area. Much of the area is rural in character, ranging from moorland to horticulture and meadowland.

### Landscape, wildlife and archaeology

West Cornwall includes some of the most distinctive, classic 'Cornish' landscapes. West Penwith is a treeless, exposed, ancient landscape, a product of the underlying granite, severe exposure to the Atlantic elements and a long agricultural history. The district is characterised by tracts of heathland, many of which are unenclosed, and small, irregularly-shaped fields bounded by Cornish hedges, many of which date from prehistoric times. Along the coast there are spectacular granitic rock formations.

The more fertile lowland is given over to dairying, early vegetable production and bulb growing. Wooded hedges occur between the fields, although significant tracts of woodland are scarce. The coastline is variable, with high, heather-clad clifftops with characteristic mining remains interspersed with large sand dune systems and relatively sheltered small fishing coves and ports. Many of Cornwall's more sizeable towns occupy this area, having developed around the traditional mining, fishing and farming industries.

Gwithian Towans and Penhale Dunes are the two largest sand dune systems in Cornwall. They are both noted for their high floristic and invertebrate species diversity.

The whole area is of great importance to migratory bird species, as it constitutes first or last landfall. Hayle Estuary, Marazion Marsh and several coastal valleys in West Penwith are particularly important sites.

Many derelict mining sites in this area are becoming well known as important nature conservation sites as they hold populations of rare lower plants (e.g. mosses) and invertebrates. Many of these species are distinctive as they have developed tolerance to mining contaminants.

### Economy

West Cornwall is very heavily visited and tourism is an important part of the local economy. Visitors come for traditional seaside holidays and for water based activities, such as sailing and surfing. Newlyn is an important fishing port and fishing takes place all around the coast.

### Fisheries

Many rivers naturally contain brown trout which have adapted to local conditions (water quality and habitat). The estuaries and coastal waters contain a wide variety of fish and shellfish.

### Farming

Agricultural land accounts for over 80% of the catchment area of which the majority, approximately 70%, is grass. Dairying is the predominant farming activity, with mixed farming and rough grazing taking place on poorer land. Bulb growing and horticulture is particularly concentrated in the area.



## Recreation

Much of the area has a high level of water-related recreational use, focused strongly on the coast. Activities such as surfing, snorkelling, water-skiing, diving and windsurfing take place along much of the coast. The beaches are a valuable recreational and economic asset.

## Water contact in rivers

The issue of water contact in rivers was raised in the consultation report with particular reference to concerns about water quality in streams flowing across beaches. The Agency does not recommend or encourage bathing in rivers as, by their very nature, they are not intrinsically safe.

## Built environment and development plans

The plan area lies within areas administered by Penwith District Council, Carrick District Council and Kerrier District Council. All local plans covering the catchment area have incorporated a number of policies for positively protecting the environment.

Seasonal population increases put pressure on infrastructure and services.

## Mineral extraction

There are 5 active quarries in the catchment working a variety of minerals: sands, aggregates and dimension stone.

Many parts of West Cornwall carry the legacy of historic metalliferous mining. South Crofty, the last working tin mine in Cornwall, is in the plan area.

## Flood defence

In recent years much has been done to protect Helston, Hayle and Perranporth. Extensive improvements and flood defence schemes have been undertaken on all main rivers in the area. We provide a flood warning service for the major rivers in the catchment.

## Water supply and abstractions

South West Water (SWW) are responsible for maintaining public water supply and abstract water from a combination of surface water sources. The area covered by this plan lies within the Colliford Strategic Supply Zone and so is fed by sources both within and outside the plan area. Within the area the company operate one reservoir scheme at Drift. This is an isolated reservoir source that provides supplies to the far west of Cornwall but is limited in its eastern extent to partly meeting demand in the Penzance district.

The local supplies which consist of a combination of borehole and shaft/adit and stream abstractions are supported from the east by imports to the area. The river abstraction on the Cober is supported throughout the summer months by a transfer of water from Stithians reservoir.

## Effluent disposal

Within the catchment there are 20 SWW sewage treatment works of which 8 are small works which receive no trade effluent and have descriptive consents, where no numerical quality standards are imposed.

There are 5 consented private sewage treatment works and 9 consented trade discharges of greater than 5m<sup>3</sup>/day volume.

### Waste management

Household, commercial and industrial waste is disposed of to the United Mines landfill site at St Day, just outside the eastern boundary of the plan area. Waste collection contractors for Carrick and Kerrier Districts discharge direct to United Downs landfill. The contractor for Penwith discharges to a waste transfer station at St Erth where waste is compacted into large containers which are carried by large vehicles to United Downs. This avoids excessively long journeys by refuse collection vehicles which have a limited load carrying capacity.

A number of transfer stations facilitate the economic temporary storage, sorting and bulking of loads prior to transportation to further recovery operations or disposal of residues.

### Recycling

Within the plan area there are a number of initiatives by local authorities to promote the reduction and re-use of waste, including recycling points. Cornwall County Council provides recycling points at major supermarkets throughout Cornwall.

Recycling facilities for domestic household waste are available throughout the area for bottles, paper, cans, textiles, plastic and oil.

### Integrated pollution control

There is one Integrated Pollution Control (IPC) process within the area, Penzance Dry Dock.



## 5. Protection through Partnership

### Working with others

The Agency is well placed to influence many of the activities affecting the water 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 in partnership with others to ensure that the Actions in this plan are implemented and that the key objectives and the long term vision can be realised. The Agency is working closely with local authorities in particular. Education also has an important role in changing attitudes and work practices.

The following organisations are included in the five year action programme:

- Cornwall Archaeological Unit
- Carrick District Council
- Cornwall County Council
- Cornwall Wildlife Trust
- English Nature
- Farming and Wildlife Advisory Groups
- Kerrier District Council
- MAFF
- Penwith District Council
- Royal Society for the Protection of Birds
- South West Water

### Local Agenda 21

In 1994 the UK government produced a national sustainable development strategy and action plan for the UK. At the local level, most authorities are working with local communities to produce their own Local Agenda 21 (LA21) programmes, to promote sustainable development and to improve quality of life. The majority of district councils have LA21 officers in place. At the heart of the LA21 concept is the idea of "thinking globally, acting locally".

The Agency is keen to be seen as a source of locally based environmental information, and a promoter of environmental initiatives suitable for delivery through LA21 groups. These include initiatives such as "Use Water Wisely", the Oil Care Campaign, and ideas to promote composting, also supported by County and District Council campaigns.

We would welcome the opportunity to work with Local Agenda 21 groups to help deliver some of the actions listed in the activity tables.



## Land Use Planning and Environment Planning

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.

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.

Some developments for which the Agency is not a statutory consultee can have the potential to affect the environment. Appendix 4 shows the range of development proposals that the Agency has interests in.

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

## 6. Activity Tables

The following tables outline the actions needed to address the issues we identified in the Consultation Report. The issues and activities are not presented in any order of priority. Issues have been renumbered from the Consultation Report. Appendix 6 shows where issues listed in the Consultation Report are located in this plan.

The tables show the following information:

- Organisations which will implement the proposed activities, either in a lead role or as a key supporter.
- A timetable for the activity.
- An estimate of cost to the Agency over the next five years, where available. The initial 'U' means that no cost estimate is available at present.
- The financial years covered by this plan are represented by a single year, for example, '97' is the financial year April 1997 to March 1998.
- Those actions where we are not currently able to commit resources will remain empty.

The following points should also be noted:

Our everyday work commits substantial resources to monitoring and managing the environment. Some of this work was explained in the Consultation Report.

Some actions will require feasibility studies and cost-benefit appraisal of options prior to work commencing. In some cases, depending on the outcome of these studies, further action may not be justified. The Environment Agency and the participating organisations have limited resources and powers, and some work may take longer than indicated owing to funding availability, government policy and more urgent priorities.

Should more issues become apparent during the life of this Plan, further actions will be added at succeeding Annual Reviews.

### 6.1

#### Effects of sewage discharges

There are a number of locations where monitoring has shown an environmental impact by consented discharges. In these locations we will progressively seek improvements to the discharge. However, we recognise the need for improvements to SWW's discharges to be prioritised through SWW's expenditure programme. We also seek support from local planning authorities in preventing any new development which would make the problem worse.

##### 6.1.1 Improvement works

Work on improvements at Porthleven including full sewage treatment with UV disinfection have now been completed and UV treatment installed at St Agnes.

Concern by local residents about the nuisance of sewage debris on Porthtowan Beach has resulted in Carrick District Council serving an abatement notice on SWW. This required SWW to screen the outfall at North Cliffs. The work is now complete and the condition of the beach much improved.



### 6.1.2 Eutrophication

Loe Pool has been proposed as a Sensitive Area (Eutrophic) under the EC Urban Waste Water Treatment Directive (UWWTD). We have produced a report to support its designation. The qualifying discharge, Helston STW, has a population equivalent of 11,000. If designated nutrient reduction would be required at the STW. Loe Pool is of great conservation value and eutrophication is considered to be a major threat to the site.

### 6.1.3 High Natural Dispersion Areas

The sea off St Ives and Perranporth is identified as potential High Natural Dispersion Areas (HNDAs). Comprehensive studies are currently being undertaken by SWW for the discharges at Hayle, Camborne/Redruth and Perranporth to identify whether primary treatment will be sufficient to protect the environment. We are responsible for auditing comprehensive studies and that they are carried out correctly. Sewage from the Penzance and St Ives areas is treated at Hayle (New) STW and discharged via the Gwithian long sea outfall.

### 6.1.4 Mercury monitoring in St Ives Bay

We are currently monitoring Hayle STW final effluent for total and dissolved mercury. The programme has been running since June 1997 and will continue until March 1998.

Table 1

Actions	Tasks	Action By	Cost to Agency (£K)	Financial Year				
				97	98	99	00	01
Assess compliance with RQOs and LT RQOs and review authorisations as required	<i>The Agency will seek improvements to Porthtowan, Helston and Tregaseal (St Just) STWs in the next round of Asset Management Plans</i>	Agency/ SWW		●	●	●		
Assess compliance with EC Bathing Waters Directive and carry out remedial work as required	<i>Implement UV treatment at Perranporth STW.</i>	SWW			●			
Assess compliance with EC Urban Waste Water Treatment Directive and carry out remedial work as required	<i>Implement improvements planned at Tolvadden and Reskadinnick SSOs</i>	SWW						
	<i>Implement improvements at Perranuthnoe Outfall</i>	SWW			●			
	<i>DETR to determine whether Loe Pool should be designated as a sensitive area under UWWTD following Agency recommendations</i>	DETR		●				
Produce comprehensive studies for HNDAs	<i>Produce studies for: Perranporth Hayle Camborne / Redruth</i>	SWW						
	<i>Audit comprehensive studies</i>	Agency						



Actions	Tasks	Action By	Cost to Agency (£K)	Financial Year				
				97	98	99	00	01
Maintain and improve water quality	<i>Monitor for mercury at Hayle STW and review consent if necessary to include mercury</i>	Agency	No extra	●				
	<i>If mercury is found, investigate sources of mercury and take appropriate actions</i>	SWW						
	<i>Make temporary improvements at Praze-an-Beeble STW permanent</i>	SWW		●				
	<i>Implement improvements planned at St Buryan STW</i>	SWW						

## 6.2 Management of Loe Pool

Loe Pool has several unique features and is an important conservation and amenity site.

### 6.2.1 Water Level Management Plan

A consultant (Halcrow) has been appointed to produce a water level management plan. It seeks to balance flood defence, agricultural and conservation interests. The flood defence situation in Helston is critically balanced. Amongst the options being looked at are;

- the possible adjustment of Loe Bar outfall to allow a higher level in the pool leading to re-wetting willow carr in Penrose Valley;
- lowering level to allow reintroduction of strapwort on Loe Bar.

The Water Level Management Plan may conclude that the status-quo should prevail. Copies of the draft plan will be available soon and the Agency would welcome views on the proposals.

### 6.2.2 Loe Pool Management Forum

The Loe Pool Management Forum is made up of representatives of responsible bodies and other interested parties. The Forum is currently discussing compilation of a catchment management plan for Loe Pool and are seeking the active involvement of the local community.

Table 2

Actions	Tasks	Action By	Cost to Agency (£K)	Financial Year				
				97	98	99	00	01
Produce water level management plan for Loe Pool	<i>Produce plan by March 1998</i>	Agency		●				
Support Loe Pool Management Forum	<i>Produce catchment management plan for Loe Pool by September 1998 and carry out appropriate actions identified therein</i>	Loe Pool Forum	20	●	●			

## 6.3

## Protection of habitats, wildlife and historic features

Conservation in its broadest sense should be an integral part of all activities, and many of the actions within this plan promote sustainability, or seek to make up for serious losses or impacts. However, additional, specific conservation actions are required.

### 6.3.1 Water level management

For wetland sites in England and Wales, formal strategies are being produced in order to clearly guide management with particular reference to the management of water tables. These are known as Water Level Management Plans and they seek to balance the needs of conservation, flood defence and agriculture.

Water Level Management Plans for Loe Pool and Loggans Moor will be produced by March 1998 and September 1998 respectively.

Marazion Marsh is an RSPB reserve managed specifically for the needs of wildlife. A water monitoring scheme is currently being drawn up and will need to be put in place with agreement from the agricultural abstractors in the catchment.

We currently manage the Hayle River upstream and downstream of Tregembo Marsh to prevent flooding. We will carry out our flood defence maintenance to best practice to ensure that the marsh continues to act as a natural wetland treatment system reducing high levels of metals in the Hayle River.

### 6.3.2 Historic audit

The Agency has carried out a desk based historic audit of the Hayle Estuary. The draft report is currently being evaluated by Cornwall Archaeological Unit and has generated considerable interest from a number of bodies who require information for the better management of the Estuary. The report recommends that follow up field work should be carried out to verify and enhance the audit.

### 6.3.3 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.

In Cornwall, 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.

Within this catchment 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 A Key habitats and species

Key habitats	Species	Status	Threats
Wet Woodland e.g. Penrose (Helston)	lower plants, invertebrates	National priority	Undervalued, neglected
Boundary features e.g. Cornish Hedges, watercourses	ferns	National priority	Removal, neglect, poor management
Grasslands esp. maritime e.g. Gwithian Towans	lower plants, invertebrates	National priority	Neglect, poor management
Heathlands wet, dry, maritime e.g. Penwith coast and moors, Ventongimps	lower plants, Cornish Heath, invertebrates	Internationally important	Removal, neglect/undergrazing, burning, pond creation
Wetlands fens, reedbeds, mires e.g. Marazion Marsh, Relubbus Marsh	otter	National priority	Drainage, neglect/undergrazing, pollution, pond creation
Freshwater ponds, rivers/streams e.g. Loe Pool		National priority	Drainage, pollution
Estuaries e.g. Hayle, Copperhouse	wading birds	Internationally important	Pollution, development, recreation, dredging, sea-level rise
Maritime cliff slopes, shingle, rocky shoreline e.g. Penwith coastline, Penhale Towans		Internationally important	Sea-level rise, development, coastal protection, pollution
Inshore marine saline lagoons, reefs e.g. St Ives Bay	grey seal	Nationally important	Sea-level rise, pollution, dredging, recreation, development
Offshore marine e.g. Longships, open sea		Nationally important	Pollution, recreation, fishing
Metalliferous mine sites e.g. Great Flat Lode, Red River Valley	lower plants, bats, dragonflies	Nationally important	Insensitive land reclamation

The next stage of the Cornwall BAP process is to produce 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% during the study period, compared with a loss of 3% 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. Otters have a relatively large territory 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.



## 6.3.4 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. These schemes should target, as a priority, those areas and features noted as priorities in the Cornwall BAP (see Table A).

Table 3

Actions	Tasks	Action By	Cost to Agency (£K)	Financial Year				
				97	98	99	00	01
Produce water level management plan for Loggans Moor	<i>Produce plan by September 1998</i>	Agency/ EN/ landowners		●				
Implement best practice to manage water levels	<i>Manage water levels at Marazion Marsh for the needs of wildlife</i>	RSPB						
	<i>Manage water levels at Tregembo Marsh</i>	Agency						
Carry out Historic Audit of Hayle Estuary and appropriate actions arising from it		Agency	1.2	●				
Support Cornwall Biodiversity Initiative and Biodiversity Action Plans for key species and habitats	<i>Produce an Action Plan for Wetlands by September 1998</i> <i>Target: To ensure no further loss of wetland habitats</i> <i>Target: To identify and restore natural drainage regime to one degraded wetland site by 2000</i>	BSG	10	●	●			
	<i>Produce an Action plan for Heathlands by June 1998</i> <i>Target: To ensure no further loss of heathland habitat</i>	BSG		●	●			
	<i>Produce an Action Plan for boundary features, particularly hedgerows and field margins by June 1998</i>	BSG		●	●			
	<i>Produce a Farmland Species Action Plan by June 1998</i>	BSG		●	●			
	<i>Produce a generic Seabirds and Wader Action Plan by June 1998</i>	BSG		●	●			
	<i>Produce biodiversity targets for Metalliferous mine sites in the catchment</i>	BSG		●	●			

Actions	Tasks	Action By	Cost to Agency (£K)	Financial Year				
				97	98	99	00	01
Work with partnership bodies and landowners to enhance natural environment	<i>Produce a management plan for Red River Valley to ensure its biodiversity potential is maximised by September 1998</i>	Kerrier DC/ CWT						
	<i>Produce biodiversity targets for Estuaries</i>	BSG						
	<i>Produce biodiversity targets for coastal zone</i> <i>Target: Identify and restore two degraded coastal sites by 2002</i>	BSG						
	<i>Produce Species Action Plans by 2003</i> <i>Status of a number of species within the catchment need clarifying</i>	BSG	5	●	●	●	●	●
	<i>Utilise LIFE data to identify sites where existing blocks of priority habitat can be linked</i> <i>Target: Identify and link up fragmented blocks in three locations by 2002</i>	BSG	30	●	●	●	●	●
	<i>Undertake research into wet woodland to enable appropriate management</i>	Agency/ others	10		●			
	<i>Improve information on pond creation, through the Agency 'Pond Form', surveys, reviews, best practice</i>	FRCA/ Agency/ FWAG/ CWT	2	●				

## 6.4

## Fisheries management

## 6.4.1 Poaching

Rigorous and high profile enforcement within the rivers, estuaries and coast will be maintained by ourselves, Ministry of Agriculture, Fisheries and Food (MAFF) and Cornwall Sea Fisheries Committee (CSFC). This is ongoing core work.

## 6.4.2 Bass fishery

Currently there is a difference in the size limit for bass caught within and outside the estuary. Within the estuary the minimum landing size is 36cm. Outside the estuary the size is 37.5cm. To resolve this anomaly we would need to seek permission from MAFF to create a new byelaw to raise the minimum landing size limit to 37.5cm to make enforcement easier.

Traditional netting for herring takes place within St Ives Bay. In Penzance Bay this is illegal and exemption permits would be needed to regularise the existing situation. We will look at this issue in consultation with the relevant parties if and when required.



### 6.4.3 Introductions and escapees

We are concerned about the occurrence and impact of fish escapees on native species and our routine work involves inspecting the stillwater lakes in the catchment and monitoring non-native escapees recorded during fisheries surveys.

### 6.4.4 Areas of potential improvement

Results from surveys have indicated poor fish densities at some sites. We will carry out investigative work when resources allow.

There are several watercourses that could support a larger fishery than at present. The identified sites need assessment followed by appropriate measures to improve the fishery.

Within the plan area there are several obstructions that are considered to prevent access of migratory fish and where action might be undertaken.

Table 4

Actions	Tasks	Action By	Cost to Agency (£K)	Financial Year				
				97	98	99	00	01
Create byelaw to increase minimum bass size limit		MAFF	U					
Legalise appropriate herring netting practises	<i>Need to identify netsmen</i>	Agency	U					
Prevent introduction of non-native fish species into freshwater and the marine environment	<i>Update database on distribution of non-native species</i>	Agency	5					
	<i>Publicise regulations and hazards of fish disease</i>	Agency	U					
Assess areas of potential improvement and carry out appropriate works	<i>Investigate cause of decline in fish numbers on: River Cober at Vellanewson Boswarna Stream Lamorna Stream Penberth Stream</i>	Agency	U					
	<i>Identify areas for potential improvements</i>		U					
	<i>Survey obstructions to assess economically feasible actions</i>		U					



## 6.5

## Sea level rise

## 6.5.1 Shoreline Management Plans

The primary purpose of a Shoreline Management Plan is to set out sustainable coastal defence policies and to set objectives for the future management of the coast.

The Agency is a member of the coastal group that is preparing the Shoreline Management Plan. This group comprises the County Council and all maritime local authorities. The plan is currently programmed to be drafted by October 1998 and will contain the agreed management option for each section of the coast. The potential impact of works at one location on the regime at other remote locations is considered in these plans.

## 6.5.2 Sea Defence Survey

The Agency updates the Sea Defence Survey annually. The adequacy and condition of defences is considered as are future improvement works. The Agency liaises with maritime local authorities over their plans for defences for which they have responsibility. Allowances for sea level rise are considered on an individual basis for each site.

## 6.5.3 Ecological impacts

The Shoreline Management Plan will identify vulnerable sites and the Cornwall Biodiversity Action Plan (See Section 6.3) will address management options required to minimise conservation loss.

Table 5

Actions	Tasks	Action By	Cost to Agency (£K)	Financial Year				
				97	98	99	00	01
Prepare Shoreline Management Plan (SMP)		CCC/ LPAs/ Agency lead - Kerrier	38 total	●	●			

## 6.6

## Farming

There is a declining trend in the numbers and severity of pollution incidents relating to farming. This has probably resulted from the extensive, proactive pollution prevention work carried out by the NRA and the subsequent positive response from the farming community. However, farming continues to have an impact on water quality within the catchment.

## 6.6.1 Soil erosion and biocides

The area is widely used for the production of early potatoes, brássicas and daffodils. In many instances the most suitable land is steeply sloping and subject to erosion during periods of wet weather. This can result in the blanketing of river gravels with mud making them unsuitable for fish spawning. In addition the erosion can cause the release of herbicides and pesticides from the land to the water environment.

We have placed a number of additional monitoring points in the catchment to collect data to determine the extent of the problem. Once data is collected an assessment will be made as to the appropriate way forward.

A Code of Good Agricultural Practice for the protection of soil is available from MAFF.

### 6.6.2 Waste

Waste applied to existing semi-natural habitats may result in a loss of conservation value. Application of industrial wastes to land for agricultural benefit are currently an exempted activity and so do not require a formal waste management licence from us. When dealing with notifications for such activity we will seek to dissuade landowners from depositing on semi-natural habitats.

### 6.6.3 Crop irrigation

Seasonal spray irrigation of early potatoes and brassicas can lead to a heavy demand on water resources during a dry spring or summer. This is usually met by water storage in irrigation reservoirs and flooded mine systems. We will promote the use of winter filled storage systems for irrigation reservoirs.

We ensure through our licensing procedures that the development of irrigation ponds has the minimum impact on the ecology and landscape of the area. Consent is required to cover construction of new seepage fed excavations for irrigation use. The Agency, through its Ponds Project, has developed a methodology to predict the likely impact of construction of seepage fed excavations for use as irrigation reservoirs. This methodology is used when determining abstraction licences.

Table 6

Actions	Tasks	Action By	Cost to Agency (£K)	Financial Year				
				97	98	99	00	01
Continue to monitor the effects of pesticides and take appropriate action where necessary	<i>Carry out additional pesticide monitoring in order to keep abreast of the introduction of any new pesticides being used</i>	Agency	U	●				
	<i>Sample eels and eel tissue for heavy metals and pesticides</i>	Agency/ Penwith DC	U		●			
	<i>Carry out intensive study of eels in one subcatchment such as the Red River, Marazion</i>	Agency	U		●			
	<i>Advise on land management to prevent soil loss and pesticide runoff</i>	MAFF/ FWAG	U					
Encourage protection of semi-natural habitat from waste disposal activities		Agency/ landowners						
Increase awareness of the adverse effects irrigation ponds can have on wetland habitats	<i>Advise on and use Ponds Project methodology to design and site irrigation storage schemes</i>	Agency/ landowners						



## 6.7

## Metalliferous mining

Historically, the catchment was one of the most important and extensively mined areas in the South West, principally for tin and copper. Underground workings have altered groundwater flows and intercepted surface water drainage, discharging via mine workings rather than flowing back into rivers and streams. Historically water quality has been affected by mine drainage.

## 6.7.1 South Crofty

The Agency has been in discussion with the company over the environmental implications of the possible closure of South Crofty tin mine. We have carried out studies in the area over the past few years and on the basis of these are not expecting 'another Wheal Jane'.

The investigations have indicated that even if the minewater pumps are switched off then the consequences for the water environment would be much less significant than in the case of Wheal Jane tin mine. This is because of the different mineral content in the South Crofty area. There would be a long lead-in period before any discharge took place. It is predicted that water levels in the mine would take approximately 3 years to reach the surface although this estimate is dependent on rainfall.

Investigations and baseline monitoring are continuing.

## 6.7.2 Management of historic mining sites

Many former mining sites are particularly rich in unusual bryophyte (mosses and liverworts) communities, others are important for dragonflies and damselflies (Odonata). Cornwall Wildlife Trust are producing 'Key Bryophyte and Odonata Site' reports to highlight the most important areas. Biodiversity Action Plans are a route for achieving this.

There is concern over the inappropriate management of archaeological remains on mine sites and a need for a thorough awareness of what archaeological value a site has before any changes are made.

The Derelict Land Reclamation Strategy for Cornwall was recently launched by English Partnerships. Amongst the actions included in the strategy are the preparation of site management plans for conservation management of former mine sites and audits of archaeological remains.

## 6.7.3 Metalliferous mining waste arisings

Widespread contamination of ground has occurred from the former operation of metalliferous mine workings in the area. During any work on spoil heaps or contaminated sites any soil containing metalliferous mining waste exported off site must be handled in an appropriate manner. We advise on suitable methods on a site-specific basis as part of our core work. Cornwall County Council, in its forthcoming waste local plan, will encourage disposal based on our advice.

## 6.7.4 Red River Valley

The Red River has been the centre of mining processes for hundreds of years and much metalliferous waste has accumulated in the silts and banks. Proposals that involve disturbing this ground can cause further environmental impacts.

Management of the valley needs to balance the needs of the variety of different interests, including archaeology, conservation, recreation and flood defence. A local group has been set up by Kerrier District Council to explore these needs. Kerrier District Council has investigated environmental improvement works along the Red River Valley, much of which it owns.



A management plan for the Red River Valley to maximise its biodiversity potential is being produced as part of the Cornwall Biodiversity Initiative.

A group from the Agency, British Trust for Conservation Volunteers and the Cornwall Dragonfly Group have carried out clearance work on overgrown wetland areas in the Red River Valley to improve habitat for colonies of rare dragonflies.

Table 7

Actions	Tasks	Action By	Cost to Agency (£K)	Financial Year				
				97	98	99	00	01
Work with all involved to ensure that any closure of South Crofty has minimum adverse environmental effects	<i>Review sources of copper and zinc on the Red River</i>	Agency	U					
	<i>Review quality, quantity and location of minewater overflow predictions using recent monitoring data</i>	Agency/ Cornwall CC/ Kerrier DC	U					
	<i>Review contingency plan</i>	Agency	U					
	<i>Instigate contingency plan with other bodies involved</i>	Agency/ Cornwall CC/ Kerrier DC	U					
Promotion of methods to prevent or minimise waste from contaminated ground	<i>Promote policy to be included in forthcoming Cornwall Waste Local Plan</i>	Agency/ Cornwall CC	U					
	<i>Give advice on Best Practise options to treat metalliferous waste arising if necessary</i>	Agency	U					
Long term management of Red River Valley	<i>Produce Local Plan policies/ Planning Brief for the management of the Red River floodplain</i>	Kerrier DC						

## 6.8

## Flood defence

Currently in our capital programme are schemes to alleviate existing flooding at Porthleven, Portreath, Perranporth and the repair or replacement of the River Hayle Tidal Barrier. We are also looking at a possible scheme at St Ives.

Kerrier District Council are responsible for improvements to the Helston Town Leat.

## 6.8.1 Flood warning

Leaflets are available showing the main rivers and coasts where a flood warning service is provided. At present flood warnings are not issued for the main rivers Angarrack Stream, Chyandour Brook, Porthleven Stream or Bolingey Stream. A region-wide study into the current flood warning Levels 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.

Table 8

Actions	Tasks	Action By	Cost to Agency (£K)	Financial Year				
				97	98	99	00	01
Construct flood alleviation schemes	Construct scheme at Porthleven	Agency	738			●		
	Construct scheme at Portreath	Agency	405				●	
	Construct scheme at Perranporth	Agency	1756	●				
	Construct scheme at River Hayle Tidal Barrier	Agency	142				●	
Determine future flood warning strategy and programme	Complete flood warning levels of service study and take appropriate action	Agency	10		●	●		

## 6.9

## Development control

## 6.9.1 Flooding

A programme of flood risk data survey, interpretation and provision to planning authorities is in hand, though currently predominantly for "main rivers" (Section 105 Survey). Indicative floodplain information for main rivers has been made available to local planning authorities and will be used in the local plan process.

New development can lead to higher rates of runoff entering watercourses possibly leading to flooding. This has an effect on the watercourse, which may undergo increased erosion or an altered flow regime. It can also reduce the amount of rain entering groundwaters, leading to reduced summer flows. Surface water can carry pollutants such as oils. There are a number of methods of source control which can be designed into new developments to limit such pollution. Additionally the Agency promotes the use of swales, wetlands and storage lagoons to reduce high rates of runoff. However, their use must be carefully chosen for individual sites. These are highlighted on a video 'Nature's Way' which is available from this office along with a leaflet.

## 6.9.2 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. The guide for Kerrier District Council was published in June 1997; those for Carrick and Penwith are currently in preparation.

## 6.9.3 First time sewerage

The Environment Act introduced new duties on water service companies to finance public sewers for domestic properties that were built by June 20th 1995 in either rural or urban areas where there are environmental or amenity problems which exist or are likely to arise. This duty is subject to environmental, engineering and economic criteria. Any Parish or District Council may apply to SWW for a scheme. We are concerned that the cumulative effect of septic tanks draining to soakaways at Praa Sands could cause environmental effects and would encourage exploration of first time sewerage options.



### 6.9.4 Review of old mineral permissions

Under the Environment Act 1995, all old mineral planning permissions (post 1947 Act) are to be reviewed and given 'modern day' conditions. The Agency is a statutory consultee in this process. We will be working with Cornwall County Council, the Mineral Planning Authority, to ensure that conditions reflect our concerns. We have been consulted on one review in the area, for Trevassick Quarry.

Table 9

Actions	Tasks	Action By	Cost to Agency (£K)	Financial Year				
				97	98	99	00	01
Identification of flood risk areas through Section 105 Surveys	<i>Schedule and cost to be determined</i>	Agency						
Monitoring environmental effects of new development		Agency	Core	●	●	●	●	●
Formally adopt currently informal development restraint areas	<i>The Agency promotes the adoption as Policy by planning committees of recommendations contained in the consultation guides</i>	LPA's	U					
Promotion of source control techniques and Best Management Practices	<i>Agency is developing national policy on source control and will promote it for inclusion in planning policy</i>	Agency		●	●			
	<i>Leaflet and video 'Nature's Way' are available</i>							
	<i>Funding for initiatives to promote Best Management Practices (BMPs) to planners and developers is being sought</i>	Agency	U	●	●			

## 6.10 Meeting current and future demand for water

We need to ensure there is an adequate public water supply now and in the foreseeable future. The catchment lies within SWW's Colliford Strategic Supply Zone and much of the public water supply comes from outside the plan area.

We have produced demand forecasts for the area served by the Colliford Strategic Supply Zone looking at two scenarios, 'high' and 'low' demand growth.

Comparing these forecasts with the current drought reliable yield of 166 Ml/d for the zone shows that in 2021 under the 'high' scenario there will be a deficit of 57Ml/d whilst under the 'low' scenario there will be a deficit of 17Ml/d.

The options that we are promoting to meet this deficit, and to ensure that the low demand scenario is the one that actually occurs, are outlined below

- encourage metering in all new developments;
- encourage selective metering as an alternative to new resources;



- encourage and publicise efficient water use and recycling;
- promote the efficient use of water;
- encourage leakage reduction to a target of at least 200 litres/property/day and agree local economic leakage targets;
- encourage water companies to make more efficient use of water resources;
- welcome and encourage the water efficiency plans which OFWAT has asked each water company to publish.

The high scenario assumes high growth in consumption, no improvements to reduce losses and no increase in domestic metering to reduce water use. The low scenario assumes low growth in domestic consumption, no growth in industrial/commercial consumption, broad company leakage targets for SWW and little or no increase in the proportion of domestic properties subject to metering above 1991 levels.

As part of a campaign to promote the wise use of water, SWW have produced a leaflet 'Home Water Checklist' for distribution to all customers and are trialling the use of 'Hippo Bags' in the Colliford Strategic Supply Zone.

In 1995 we produced 'Tomorrow's Water', a strategy for the development of water resources in the South West. There is now a requirement to review that document in light of changes in water supply and demand. We will publish a revised regional water resources development strategy following preparation of South West Water's Water Resource Plan. Reviews of reservoir operating agreements are to be incorporated into the revised Strategy.

#### 6.10.1 Coping with droughts

We are currently in the process of agreeing a detailed Drought Management Plan (DMP) for the Colliford Strategic Supply Zone, with SWW. This will establish a staged programme of water conservation measures to be taken as a drought intensifies. Key actions will be triggered when reservoir storage falls below 'drought alert' reservoir control curves. Control curves identify when particular operational actions are necessary by plotting reservoir storage levels against the time of year. The Agency promotes the use of this management technique to ensure appropriate action is taken to reduce demand before drought orders or permits which affect the environment are used.

Table 10

Actions	Tasks	Action By	Cost to Agency (£K)	Financial Year				
				97	98	99	00	01
Modelling of Colliford Strategic Supply Zone to determine the yield, best use of available resources and future developments	Agency to audit SWW reassessment of yields for all sources within the Colliford supply zone under the Agenda for Action initiative	Agency	40	●	●			
	Prepare water resources plans in conjunction with SWW and publish a revised regional water resources development strategy	Agency/ SWW	80 (for whole county)	●	●	●	●	

Actions	Tasks	Action By	Cost to Agency (£K)	Financial Year				
				97	98	99	00	01
Drought management	<i>Drought Management Plan will include operational management of public water supply sources. For example maximising the use of river abstractions within licenced limits to conserve reservoir storage, demand (customer) management such as enhanced leakage control and/or hosepipe bans as well as Drought Orders/Permits, where these are deemed necessary</i>	Agency	15					

## 6.11

## Waste management

We will be undertaking national waste arisings surveys and will be making the data available to advise the various bodies having an interest in waste planning. The Agency is producing a regional strategy to outline the current and future needs for waste management based on the nature and quantities of waste arisings. The waste management industry can then plan and encourage moves up the waste hierarchy from disposal through recovery towards the prime option of waste minimisation. Cornwall County Council, the waste planning authority, is currently preparing its waste local plan to ensure the provision of adequate treatment and disposal facilities at suitably located sites.

We work in collaboration with the Payback organisation in the set up of Waste Minimisation Groups. The Payback organisation is the consultancy service of Groundwork Trust for Devon and Cornwall who carry out waste audits for businesses. 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 landfill disposal. These initiatives have enabled many companies to discover scope for cost savings whilst changing their approach to waste and other emissions.

We wish to promote the setting up of a West Cornwall Waste Minimisation Group to encourage co-operation and liaison between business, local authorities and the Agency.

We also have an educational and facilitating role in the process of changing attitudes to waste management. The environmental impact of wastes can and will be reduced by improved methods and the establishment of appropriate facilities which represent the Best Practicable Environmental Option.

#### 6.11.1 Cornwall Waste Management Forum

The Cornwall Waste Management Forum meets regularly to exchange views, appraise new technology and best practice and to discuss an integrated waste strategy for Cornwall. The group is made up from representatives of the waste collection authorities (district councils), the waste disposal authority, waste disposal contractor and the Agency. The group recognises the need for a co-operative approach aimed at a more sustainable waste management system.



The Agency uses the Forum as a link between National waste strategies and local operations. Future waste operations will be influenced by the Forum. This will lead to environmental benefits to the locality and to Cornwall as a whole.

### 6.11.2 Landfill capacity

Landfill capacity in West Cornwall is becoming limited and there will be a need for additional void space together with an integrated range of facilities for the treatment and recovery of wastes. The emerging Cornwall Waste Local Plan will identify the most suitable options.

### 6.11.3 Fly tipping

We will work with other agencies and public groups to increase awareness of flytipping concerns and to support initiatives to clear sites and prevent re-occurrence.

A memorandum of understanding is currently being drawn up to outline the approach to be taken to this problem between local authorities and the Agency.

Table 11

Actions	Tasks	Action By	Cost to Agency (£K)	Financial Year				
				97	98	99	00	01
Carry out regional waste arisings survey		Agency	U		●			
Reduce waste requiring disposal by encouraging and developing recycling initiatives	<i>Part of the work of the new Area Tactical Planning staff within the Environment Planning Department of the Agency will be to develop campaigns and develop partnerships with businesses and other organisations</i>	Agency	U		●	●	●	●
Identify criteria for waste disposal sites	<i>Consultation on County Council and Local Authority plans for identification of disposal sites and through the licensing process</i>	Agency	U		●	●	●	●
Draw up strategies for sustainable waste management	<i>Liaison with Cornwall Waste Management Forum, Payback and other initiatives</i>	Agency	U	●	●	●	●	●
Reduce fly tipping	<i>Rigorous enforcement and publicity to stop fly tipping</i>	Agency	U		●	●	●	●
	<i>Remedial works on notorious sites to reduce access for illegal tipping</i>	Cornwall CC/ local councils/ landowners	U			●	●	●

## 6.12 Effects of Penzance Dry Dock

Penzance Dry Dock is engaged in the maintenance of ships, including the application and removal of Tributyltin (TBT) anti-fouling compounds from ships. The Agency issued an IPC authorisation for the dock in September 1997. As part of the authorisation the operator has undertaken to carry out an improvement programme by the year 2000.

Table 12

Actions	Tasks	Action By	Cost to Agency (£K)	Financial Year				
				97	98	99	00	01
Investigate potential effects of dockyard processes on the environment	<i>The initial water quality survey has now been completed</i>	Agency	300	●				
	<i>Carry out dust assessment</i>	Operator		●				
Carry out improvement programme	<i>Treatment of TBT releases to water by October 1999</i>	Operator		●	●	●		

## 6.13 Quality of surface waters

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

- Standards laid down in EC Directives
- River Quality Objectives (RQOs) to protect recognised uses (see Appendix 3).

### 6.13.1 River Quality Objectives

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

Long term RQOs have been set for 5 stretches in the catchment. These are objectives we would like to achieve, but the actions required to achieve them are long term and are not achievable in the short term. We will use these long term RQOs as a basis for setting consents for new discharges and planning for future water quality improvements.

We 'set-aside' data where high concentrations of metals are caused by the natural geology of the catchment or historic mining activity. This allows us to protect good water quality shown by other determinands in the RE classification. Stretches where we will 'set-aside' data are shown on Map 2.

### 6.13.2 Causes of poor water quality

Our monitoring under various EC Directives and water quality objectives may identify problems where we do not know the cause. In such cases we normally undertake investigations to identify the cause.

We have investigated the RQO failure on the Bolingey Stream from Perranwell to the normal tidal limit. Low DO concentrations are caused by low flows through a marshy area. The monitoring point will be relocated from January 1998 to enable a more representative sample to be taken



Table 13

Actions	Tasks	Action By	Cost to Agency (£K)	Financial Year				
				97	98	99	00	01
Carry out investigations to identify causes of poor water quality	<i>Investigate cause of failures on the Trevaylor Stream</i>	Agency	5		●			
Investigate causes of poor water quality effects on invertebrate biology and take appropriate remedial action on Tregilliowe Stream Chyandour Brook Holywell Stream		Agency	U					

## 6.14

## Air quality

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

Table 14

Actions	Tasks	Action By	Cost to Agency (£K)	Financial Year				
				97	98	99	00	01
Draw up strategy	<i>Conference arranged to plan future work</i>	Cornwall Air Quality Forum			●			

**Appendix 1      The Role of the Environment Agency****Water resources**

In water resources we work to save, redistribute and improve river, lake, reservoir and underground water supplies and we encourage water conservation. We balance the needs of people who use water and the environment by managing 'abstraction and management licences' issued to customers to take or use water from rivers and boreholes.

**Preventing pollution**

We respond to reported pollution incidents in the air, on land or in water.

**Water quality**

Water quality prevents and controls pollution and monitors the quality of rivers, estuaries, coastal waters and groundwater. We manage 'discharge consents' which give permission for people to release used water into a river, groundwater or the sea. We regularly monitor rivers, estuaries and the sea to check the quality of the water. We report the results of our water and effluent sample analyses in the public register.

**Integrated pollution control**

'Integrated pollution control' (IPC) is made up of regulating the most polluting, or technologically-complicated industrial and other processes to help prevent pollution or cause as few harmful releases to the air, on land or to water as possible.

**Radioactive substances**

Our responsibility for radioactive substances is made up of regulating how radioactive materials are kept and used and the build up and disposal of radioactive waste. In the case of nuclear sites we only regulate the way waste is disposed of and the Nuclear Installations Inspectorate regulates how radioactive materials are kept and used and the build up of radioactive waste.

**Waste**

Waste regulation is made up of providing advice on the best waste management practices and making sure that waste is dealt with legally and safely. We also register and monitor all those who carry waste for business. We must be told beforehand if anyone moves dangerous waste (known as 'special waste'). We register companies who produce a lot of waste and we monitor them to make sure they meet their targets for waste recovery and recycling.

**Contaminated land**

During the course of its use, land can be damaged by chemical pollution. A number of public and private organisations are involved with finding and dealing with the problem. We aim to work with others to reduce the risk of harm from contamination and to bring land back into good use.

The area has been the centre of mining processes for hundreds of years and widespread contamination of ground has occurred from the former operation of metalliferous mine workings in the area. We advise on suitable methods on a site-specific basis as part of our core work.



## Flood defence

Flood defence has the role of reducing risk to people and the environment from flooding by providing effective defences. Protecting life is our highest priority and to meet this aim we provide a flood forecasting and warning service and discourage development in flood-risk areas. We also manage flood defences, and we have an aim to protect and improve the natural environment by promoting flood defences that work with nature. In areas where there is a flood forecasting facility already, we aim to provide a warning (up to two hours beforehand) for properties in flood-risk areas.

## Fisheries

Fisheries has the responsibility for maintaining, improving and developing salmon, sea trout, non-migratory trout, coarse and eel fisheries. We regulate fishing by issuing licences for rod angling and net fishing. We carry out improvements to fisheries by improving the habitat and fish stocks and providing advice to fishery owners. We will assess how serious any incident reported to us is of fish being killed and then take action when necessary.

## Recreation

Recreation and access are also important parts of our work. We ensure that the sites we control are managed for recreational use. We also have a general duty to promote the recreational use of water and land throughout England and Wales.

## Conservation

We must also make sure we protect wildlife, landscape and archaeological heritage, either by allowing others to do things or to carry out work ourselves.

## What we do not do

We do not cover all areas of environmental law and service to the general public. We are not responsible for :

- noise problems (except if it is to do with our work);
- litter;
- air pollution arising from vehicles, household areas, small businesses and small industries;
- collecting waste in your local area;
- planning permission; or
- environmental health and food hygiene.

Your local authority deals with these issues and will contact us when necessary. The local authorities also deal with contaminated land issues by working with us. We are not responsible for the quality or supply of drinking water or getting rid of sewage waste. You should contact your local water or sewerage companies for more details - you can find their details in your local phone directory.

## Appendix 2 Consultees who responded to the public consultation

- English Sports Council
- MAFF
- National Trust
- Cornwall Archaeological Unit
- Cornwall County Council
- Countryside Commission
- English Nature
- Forestry Authority
- NFU
- RNAS Culdrose
- RSPB
- Ramblers Association
- West Cornwall Friends of the Earth

Further written responses, including questionnaires, were also received from members of the public. Other comments were received at the manned displays.

## Appendix 3 River Quality Objectives

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

### The River Ecosystem Scheme

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

River Ecosystem classes can be summarised as follows:

- **RE1** Water of very good quality suitable for all fish species.
- **RE2** Water of good quality suitable for all fish species.
- **RE3** Water of fair quality suitable for high class coarse fish populations.
- **RE4** Water of fair quality suitable for coarse fish populations.
- **RE5** Water of poor quality which is likely to limit coarse fish population.



The River Ecosystem scheme takes forward the core standards from the old NWC scheme, but also incorporates new standards and firm rules on how the scheme should be applied. These are described in detail in the document *Water Quality Objectives: Procedures used by the National Rivers Authority for the purpose of the Surface Waters (River Ecosystem) (Classification) Regulations 1994*, available from the Water Quality Planning departments at our Regional Office in Exeter. Current and long term River Quality Objectives for river stretches are shown on Map 2.

## Appendix 4 Development

To enable the Agency to fulfill its role of protecting and enhancing the environment we require consultation on the following types of development

### General

- Development within or adjacent to any watercourse or which includes a discharge to a watercourse.
- Development including landraising, in areas at risk of flooding from rivers including tidal lengths, and the sea.
- Development on, under or adjacent to any flood bank, sea defence or other flood control structure.
- Development which may affect an aquatic/wetland site of conservation interest.
- Development of contaminated land, e.g. gas works, historic industrial use, bulk fuel storage, chemical production and landfill.
- Development involving the disposal of sewage other than to a public sewer, including the use of septic tanks, cesspits, private sewers and private sewage treatment works.
- Development which could affect groundwater protection zones.
- Development which could exacerbate existing sewerage or sewage disposal problems.
- Development within 250 metres of land which is or has, at any time in the 30 years before, been used for the deposit of refuse or waste and has been notified by the Agency.
- Development on the site of or within 500 metres (measures from site boundary) of a process subject to Integrated Pollution Control, or subject to the Control of Industrial Air Pollution (Registration of Works) Regulations 1989.
- Development involving the raising or reclamation of land.
- Development which falls within the Environmental Assessment Regulations 1988.

### Specific

- Residential, industrial or commercial developments greater than 0.5 hectares in area or which incorporate an access road.
- Major infrastructure schemes, e.g. highways, railways, power stations, wind farms, airports, tunnels, oil refineries, pipelines and any associated facilities.

- Waste management operations including landfill, waste transfer stations, incinerators, scrap yards, solvent recovery plants, baling and recycling plants.
- Mineral workings and exploratory works to include oil and gas exploration and land restoration projects.
- Petrol filling stations or other bulk storage facilities for petroleum products and chemicals including hazardous substances, fertilisers and pesticides (above or below ground).
- Vehicle parks including plant hire and transport depots.
- Agricultural developments to include intensive livestock and poultry units, chemical and fertiliser storage, the making and storage of silage and the storage and disposal of manure and effluents.
- Kennels, catteries, stables, etc.
- Camping and caravan sites.
- Timber treatment plants.
- Cemeteries and crematoriums.
- Fish farming activities, fish stocking or relocating of fish or works which will restrict the movement of fish.
- Water-based recreation facilities or developments affecting access to water or waterside areas.
- Ponds, lakes and reservoirs, including water storage for irrigation.
- Golf courses.
- Swimming pools.
- Forestry activities.

## Appendix 5

### Sites of Special Scientific Interest

The 34 SSSIs within the area can be grouped as follows:

**Treen Cliff, Portkgwarra to Pordenack Point, Aire Point to Carrick Du, Godrevy Head to St Agnes, Cligga Head and Kelsey Head** SSSIs are designated mainly for the extensive tracts of maritime heathland they support. Other habitats present include maritime grassland, scrub and wet flushes. A number of rare plant species are present in some places, some of which are listed in the Red Data Book (RDB). Invertebrate populations, particularly Lepidoptera, are significant in some sites. Much of the coastline within these sites is an important staging post for migrating birds.

**Silverwell Moor, Ventongimps Moor and Carnkief Pond** contain wet heathland, noted for the presence of the rare Dorset Heath as well as important Odonata communities.

**Penhale Dunes and Gwithian to Mexico Towans** are the largest and second largest sand dune systems in Cornwall. These illustrate a range of erosional and depositional coastal processes, but are most noted for their species-rich vegetation. A number of RDB and Nationally Scarce species occur, and Penhale is one of the richest moss sites in Cornwall. Lepidoptera communities are also extremely rich at both sites.



Loe Pool SSSI contains the largest natural freshwater lake in Cornwall, and the shingle feature of Loe Bar is a unique coastal feature in Cornwall. Several rare plant species occur on the bar and in the site, and the bar holds the only known British population of the Cornish subspecies of the Sandhill Rustic Moth. Significant numbers of waterfowl overwinter on the pool.

Tregonning Hill is a small area of heath and scrub that supports the only known British population of the RDB liverwort Western Rustwort.

Marazion Marsh holds the largest reedbed in Cornwall. Three Nationally Rare plants occur here, and the site is an important fuelling point for migratory birds and for breeding Odonata.

Hayle Estuary & Carrick Gladden contains the most south-westerly estuary in Britain. This is of great significance to migratory and wintering birds. Sand dune, salt marsh and maritime heathland occurs, and several rare plant species grow here.

Chyenhal Moor is a small area of wet heath and willow carr. The site has a long recording history, which includes several rare species.

Loggans Moor is the most species-rich meadow in west Cornwall. It contains damp and calcareous grassland and tall herbs which include several rare species.

Nance Wood is an area of semi-natural oak woodland which supports one of only two populations of the RDB Irish Spurge.

The remaining 16 SSSIs - Porthleven Cliffs, Porthleven Cliffs East, Wheal Penrose, Tremearne Par, Great Wheal Fortune, Porthcew, Folly Rocks, Cudden Point to Prussia Cove, St. Michael's Mount, Penberthy Croft Mine, Penlee Point, Tater-du, St. Erth Sand Pits, Wheal Alfred, St. Agnes Beacon Pits and Trevaunance Cove are listed primarily for a wide range of significant geological reasons, although a few have biological interest as well. Many reflect the district's rich mining and mineralogical heritage, as well as the unusual conditions created by the igneous granitic intrusions contacting with the existing 'country rock'.

## Appendix 6 Guide to Consultation Report and Action Plan Issues

	Consultation Report Issue	Reference in this Action Plan
Issue 1	Proposed River Quality Objectives (RQOs)	Section 6.13
Issue 2	Air quality	Section 6.14
Issue 3	Impacts on freshwater and estuarine fisheries	Section 6.4
Issue 4	Sea level rise	Section 6.5
Issue 5	Protection of habitats, wildlife and historic features	Section 6.3
Issue 6	Impact of agriculture and horticulture	Section 6.6
Issue 7	Impact of metalliferous mining activities	Section 6.7
Issue 8	Impact of development	Sections 6.8 and 6.9
Issue 9	Meeting current and future demand for water	Section 6.10
Issue 10	Generation and management of wastes	Section 6.11
Issue 11	Impact of sewage discharges	Section 6.1
Issue 12	Impact of ship repair yards	Section 6.12
Issue 13	Unknown causes of poor water quality	Section 6.13
Issue 14	Natural causes of poor quality	Section 6.13
Issue 15	Water contact in rivers	Section 4
Issue 16	Management of Loe Pool	Section 6.2
New Issue	Flood warning	Section 6.8

## 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 working (the downstream entrance is called the adit portal).

### ARISINGS

Quantities of waste being generated.

### CONSENT

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

### CONTROLLED WASTE

Is waste from household, commercial or industrial sources, it may be solid or liquid. It does not have to be hazardous or toxic.

### CORNWALL WASTE MANAGEMENT FORUM

The Forum consists of representatives from the six District Councils, as the waste collection authorities, County Council, as the waste disposal authority and planning authority, and the County Councils waste disposal contractor, and the Agency.

### 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 Sch 22 S139 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 enrichment of water by nutrients, especially nitrogen and/or phosphorous, which causes: 1) accelerated growth of algae and higher plants, 2) changes in the ecological balance, and 3) deterioration in water quality.

### FLUVIAL

Pertaining to river flow and its erosive activity.

### LICENCE OF ENTITLEMENT

Licence granted under Schedule 26 of the Water Act 1989 in respect of a previously exempt abstraction greater than 20m<sup>3</sup>/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'.

**NUTRIENT**

Conveying, serving as, or providing nourishment.

**PAYBACK**

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

**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.

**SPECIAL WASTES**

These are the most hazardous wastes, they include 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.

**Abbreviations**

BSG	-	Biodiversity Steering Group
CCC	-	Cornwall County Council
CWT	-	Cornwall Wildlife Trust
DETR	-	Department of the Environment, Transport and Regions
EN	-	English Nature
FWAG	-	Farming and Wildlife Advisory Group
LPA	-	Local Planning Authority
RSPB	-	Royal Society for the Protection of Birds
SSO	-	Storm sewage overflow

**References**

<sup>1</sup> West Cornwall Local Environment Agency Plan Consultation Report, Environment Agency, June 1997. SW-6/97-0.8K-E-AYTV

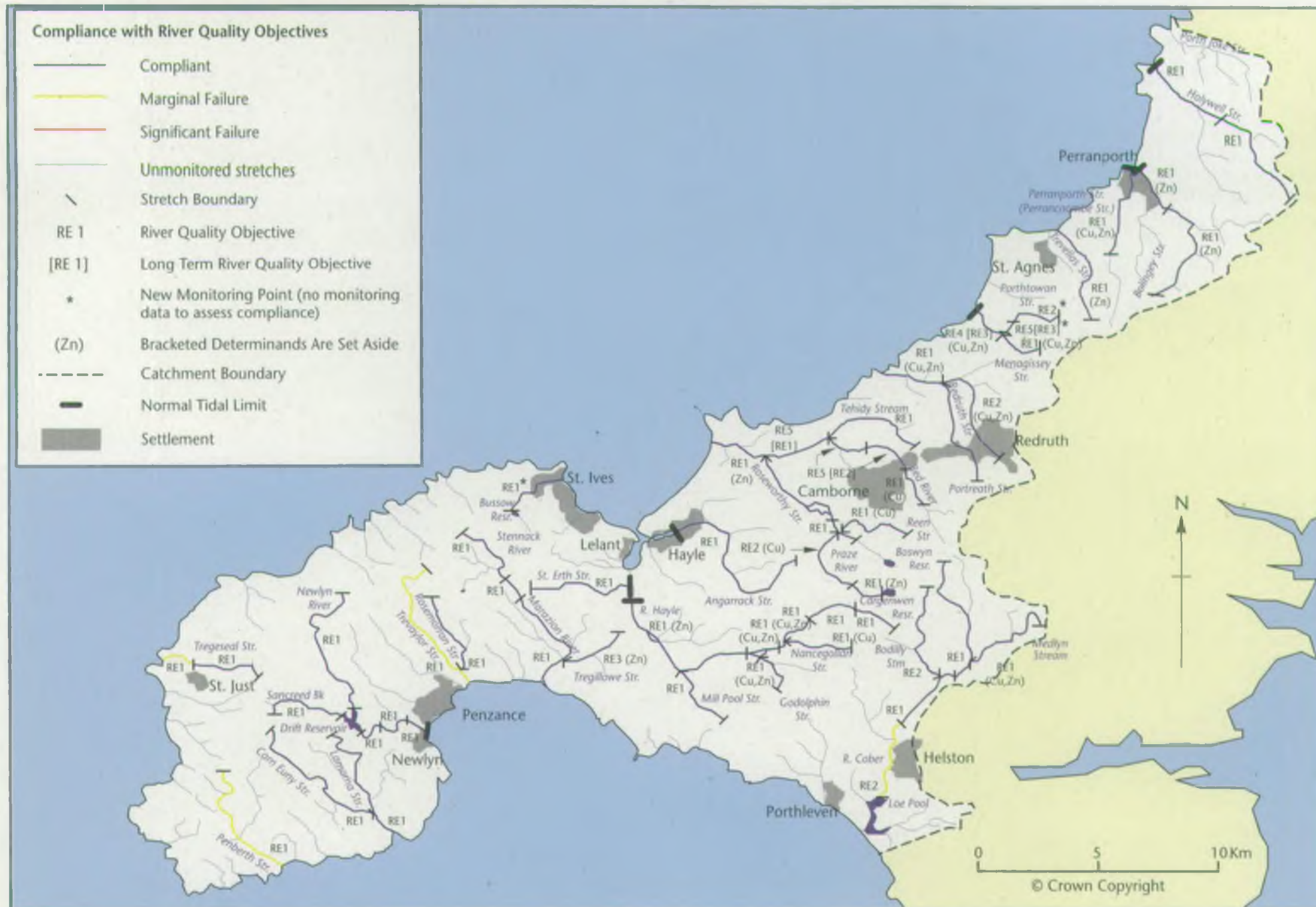
<sup>2</sup> Tomorrow's Water: South West Regional Resources Development Strategy. NRA South Western Region, April 1995. SW-4/95-1k-B-ANOQ.







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





# map 2

Fold out for Map 2

1996 Compliance with River Quality Objectives (River Ecosystem Classification)

## MANAGEMENT AND CONTACTS:

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

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

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

### ENVIRONMENT AGENCY REGIONAL OFFICES

#### ANGLIAN

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

#### SOUTHERN

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

#### NORTH EAST

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

#### SOUTH WEST

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

#### NORTH WEST

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

#### THAMES

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

#### MIDLANDS

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

#### WELSH

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



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

#### ENVIRONMENT AGENCY GENERAL ENQUIRY LINE

**0645 333 111**

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


#### ENVIRONMENT AGENCY EMERGENCY HOTLINE

**0800 80 70 60**



**ENVIRONMENT  
AGENCY**





*All enquiries to:*  
**Cornwall Area**  
**Sir John Moore House**  
**Victoria Square**  
**Bodmin**  
**Cornwall**  
**PL31 1EB**  
**Tel: 01208 78301**  
**Fax: 01208 78321**

