

# local environment agency plan

## WEST CORNWALL

FIRST ANNUAL REVIEW

JUNE 1999



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AGENCY



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## Foreword

This is the first annual review of the West Cornwall Action Plan, which was published in January 1998. It describes the progress that has been made since.

In addition to our own actions in the plan area we welcome opportunities to work in partnership with other groups.

GEOFF BOYD  
Area Manager (Cornwall)







## West Cornwall - First Annual Review

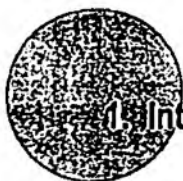
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## Acknowledgements

We would like to thank all those who have given valuable contributions to this report about activities during the past year. We would like to give particular thanks to the LEAP Steering Group. They are:

Name			Representing
Mr	RJ	Angove	National Farmers Union
Mr	B	Collins	Kerrier District Council
Mr	D	Davies	Helston School
Mr	D	Flumm	RSPB
Mr	M	Johnson	Riparian Owner
Mr	WT	Knott	Marazion Angling Club
Mr	R	McCawley	South West Water
Mr	M	Nisbet	Penwith District Council
Dr	CV	Phillips	Area Environment Group, Camborne School of Mines
Cllr	N	Richards	Area Environment Group, Penwith District Council
Dr	L	Salter	Comwall College
Ms	P	Tompsett	Conservation
Mr	K	Varnals	Tourism
W/O	S	Meek	RNAS Culdrose



## 1 Introduction

### 1.1 Who are the Environment Agency

The Environment Agency has a wide range of duties and powers relating to different aspects of environmental management. These duties together with those areas where we have an interest, but no powers in, are described in more detail in Appendix 2. We are required and guided by Government to use these duties and powers in order to help achieve the objective of sustainable development. 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 consultation draft. Further detail on standards and compliance is available from the address given on the back of this document.

### **Our Role**

Our role is explained in further detail in Appendix 2.

### **This Annual Review of the West Cornwall Action Plan**

An important part of the Local Environment Agency Plans (LEAPs) process is to monitor the Action Plan to ensure that targets and actions are achieved and that the plan continues to address relevant and significant issues within the area. This Annual Review reports on the progress made since the publication of the Action Plan and details the progress of work shown in the activity tables as well as additional actions required in light of changes in the area.

Part of the review process has been a forum to look at the progress over the past year and to update the plan where necessary to take account of new and changing issues. Invitations to the forum were sent to the steering group and local bodies with responsibilities for and interests in the environment. Actions and comments from the forum discussions have been incorporated into this review.





## 2. Area 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.

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 cliffs 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.

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.

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.

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.

### Key Statistics for West Cornwall

Catchment Area	584 km <sup>2</sup>
River	Area drained (km <sup>2</sup> )
Cober	53.75
Mounts Bay Streams	153
Lands End Streams	128.5
Hayle	55.5
Red and North Coast	193.25
Population	134,000 (approx.)
Main Urban Areas	Penzance, Camborne, Redruth, Helston, St Ives
Average Annual Rainfall	1090 mm
Industries	Agriculture and horticulture, tourism, fishing, small and medium-sized enterprises (SMEs)



## 3. Protection through Partnership

### 3.1 Working with others

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 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.

#### 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 local authorities are working with local communities to produce their own Local Agenda 21 programmes, to promote sustainable development and to improve quality of life. It is the idea of thinking globally, acting locally.

The Agency has commented on the Local Agenda 21 strategies being drawn up by district councils and works in partnership with other interested bodies and local groups towards sustainable development.

#### Other initiatives

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 make the most of limited budgets.

#### Cornwall Waste Management Forum

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

#### Recreation projects

In the past year the Agency has provided funding for Penzance Canoe Club to purchase specialist disabled seagoing kayaks and training for their use. We have also been involved in providing birdwatching facilities at Drift Reservoir, Marazion Marsh and Hayle Estuary.

#### The Water Companies

The Agency is responsible for the environmental regulation of the water companies of England and Wales whilst OfWat is responsible for the financial regulation. The Agency works with the water companies in order to ensure best possible use of available resources.

OfWat is undertaking a review of water prices that will result in a review of improvements required for the period 2000-2005; the outcome of this will be AMP3. The Agency's proposals for the National Environment Programme for water companies 2000 - 2005 was submitted to Government in May 1998 in the document A Price Worth Paying. Following consultation with the Agency and OfWat, the DETR published guidance in September to OfWat for the environmental and quality objectives to be achieved by the water industry in the period 2000 - 2005; this is the report Raising the Quality. This guidance has now been translated into detailed environmental obligations which have been agreed by the Secretary of State for each water company.

AMP3 also required the water companies to revise their water demand forecasts, review their resource availability and consider any potential resource options to meet forecasted deficits within the planning horizon. In parallel with this the Agency required the water companies to complete Water Resource Plans by March 1999. The Water Resource Plans require water companies to produce demand forecasts and compare them with their available resources for the next 25

years. Potential demand or resource-management options, including leakage reduction, have to be considered, and, if necessary, any resource-development options which may be required to meet the forecast demand. These plans have been received and a report on them, Planning Public Water Supplies, was sent to DETR in June 1999. The companies will be expected to update these plans on an annual basis and the report also details the main changes the Agency wishes to see incorporated in the revisions of the plans.

The Agency welcomes opportunities to work in partnership with interested bodies for the protection and enhancement of the environment.



## 4. Actions

The following tables update the progress of each issue identified in the Action Plan. The issues and activities are not presented in any order of priority.

The following points should be noted:

- Our everyday work commits substantial resources to monitoring and managing the environment.
- 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.

## **Effects of sewage discharges**

The Agency has identified a number of locations where consented discharges are causing an adverse environmental impact. In these locations we will be actively seeking improvements to the discharge. However, we recognise the need for improvements to be prioritised through SWW's expenditure programme. We will work with South West Water and planning authorities to ensure developments do not increase environmental impacts.

### **Asset Management Plans - AMP2/AMP3**

The Water Companies' improvement plan for the period 1995-2000 is known as Asset Management Plan 2 (AMP2). AMP2 was developed in 1994 along guidelines agreed between the National Rivers Authority (now the Environment Agency), the Department of the Environment (now the Department of the Environment, Transport and Regions) the water services companies and the Office of Water Services (OFWAT). OFWAT is undertaking a review of water prices which will result in a review of improvements required for the period 2000-2005; the outcome of this will be AMP3. The Environment Agency has been reviewing, for agreement with DETR, those sewage discharges where improvement is required. DETR have now considered our proposals and have translated these into detailed environmental obligations, where we expect the improvements to take place by 2005. Many of these schemes will be delivered before 2005; the Water Companies are currently preparing their Strategic Business Plans which will confirm the delivery dates of these schemes.

The Government have included Porthtowan, Helston, Cot Valley (St Just) and Perranporth in the environmental obligations for South West Water. South West Water are required to include these works in their Strategic Business Plan for improvements in AMP3.

The improvements we proposed at St Buryan were viewed as a lower priority by government and we would not expect improvements to be completed in AMP3. We did not put Tregaseal (St Just) forward for improvements as the present performance of the STW is acceptable. Flows from Cot Valley (St Just) are planned to be transferred to Tregaseal sewage treatment works which will need to be uprated at that time.

### **Race Farm, Treswithian**

There is a requirement under UWWTD for sewage flows in the Redruth and Camborne area to be treated by the end of 2000. SWW presented proposals in 1998, to build a STW and sludge re-processing plant at the Race Farm site in Treswithian, nr Camborne. The proposed STW may treat sewage from the Redruth, Portreath and Camborne area, whilst the proposed sludge re-processing plant may take sludge from the surrounding area (be more specific) for processing into fertiliser pellets.

A planning application for the works was made by SWW, but was rejected by the Cornwall County planning committee. At present SWW are currently appealing against the decision.

### **Reskadinnick Combined Sewage Overflow**

The improvements for Reskadinnick Combined Sewage Overflows are currently linked with the proposals for the new treatment works at Race Farm, near Camborne. Improvements will not therefore occur until a STW site is secured.

### **Tolvaddon Combined Sewage Overflow**

The performance of this CSO has been evaluated and has shown that improvements are not required.

### **Loe Pool**

Loe Pool was designated a sensitive area (eutrophic) under the EC Urban Waste Water Treatment Directive (UWWTD) in July 1998. As a result SWW are required to install nutrient (phosphorus) reduction at the qualifying discharge, Helston STW, by the end of 2004. Loe Pool is of great conservation value and eutrophication is considered to be a major threat to the site. (see Loe Pool actions)

### **Perranporth, Hayle & Camborne /Redruth High Natural Dispersion Areas**

At the end of 1998 the Government decided that secondary treatment is required for all significant coastal discharges and therefore Comprehensive Studies are not required.

### **Hayle**

We are currently monitoring Hayle STW final effluent for total and dissolved mercury. The programme ran from June 1997 until March 1999, when the data was assessed to determine whether further action is required. Assessment has indicated that it is unlikely that the effluent poses a problem.

Action	Lead Body	Cost (£)	Financial years					Progress Year 1
			97	98	99	00	01	
Assess compliance with RQOs and LT RQOs and review authorisations as required								
1.1 The Agency will seek improvements to Porthtowan, Helston, Tregaseal (St Just) and St Buryan STWs in the next round of Asset Management Plans	Agency/ SWWL							We expect improvements to Helston and Cot Valley (St Just). UV is now online at Porthtowan, consent not yet revised.  Tregaseal and St Buryan see above text.
Assess compliance with EC Bathing Waters Directive and carry out remedial work as required								
1.2 Implement UV treatment at Perranporth STW	SWWL			*				UV treatment has been installed at Perranporth STW and is operating satisfactorily. Secondary treatment is required in AMP3.
Assess compliance with EC Urban Waste Water Treatment Directive and carry out remedial work as required								
1.3 Implement improvements planned at Tolvaddon and Reskadinnick CSOs	SWWL							Improvements at Reskadinnick are currently included with the proposals for the new treatment works at Race Farm. Improvements at Tolvaddon are no longer required.
1.3.1 Implement improvements at Perranuthnoe Outfall	SWWL							SWW are planning to transfer flows to Hayle WWTW, to be completed by end of AMP2 period; 2000.
1.3.2 DETR to determine whether Loe Pool should be designated as a sensitive area under UWWTD following Agency recommendations	DETR		*					Loe Pool was designated a sensitive area (eutrophic) under the UWWTD in July 1998. (see text above)
Produce comprehensive studies for High Natural Dispersion Areas								
1.4 Produce studies for: Perranporth Hayle, Camborne / Redruth	SWWL							No comprehensive studies will be produced for the HNDA's as secondary treatment is now required under the UWWTD.
1.4.1 Audit comprehensive studies	Agency							Not required now.
Maintain and improve water quality								
1.5 Monitor for mercury at Hayle STW and review consent if necessary to include mercury	Agency		*	*				Monitoring completed
1.5.1 If mercury is found, Investigate sources of mercury and take appropriate actions	SWWL			*				Investigation complete.
1.5.2 Make temporary improvements at Praze-an-Beeble STW permanent	SWWL		*					The improvements have been completed

## Management of Loe Pool

Loe Pool is Cornwall's largest natural lake. It has several unique features, is an important conservation and amenity site and has been designated a Site of Special Scientific Interest (SSSI). It has been affected by a number of activities in the past, such as mining, which have left a legacy of environmental damage. The restoration of the pool will be a long-term process, which will be steered by the Loe Pool Management Forum.

### Loe Pool Management Forum

The Loe Pool Management Forum is made up of representatives of responsible bodies and other interested parties, including the Agency. The Forum published a Catchment Management Plan in September 1998. Many of the actions arising from the plan have been addressed and the forum still meets to discuss the progress of the actions and future work. The actions arising from the summary of measures for management are detailed below and progress will be reviewed as part of this LEAPs process.

### Water Level Management Plan

Consultants (Halcrow) were commissioned to produce a water level management plan for Loe Pool, which was published in 1998. One of the key recommendations of this report was to adjust the Loe Bar outfall to allow higher water levels within the pool. The water level management plan is currently being reviewed by the River Restoration Centre to assess the evaluations of the proposed options.

### Fisheries survey

We carried out a qualitative fisheries survey of Loe Pool in 1998. The results of the survey will be made available in a report that is currently in preparation and will be published during 1999. We will be undertaking a further study in 1999.

Action	Lead Body	Cost (£)	Financial years					Progress Year 1
			97	98	99	00	01	
Produce water level management plan for Loe Pool								
2.1 Produce plan by March 1998	Agency		*	*				Loe Pool Water Level Management Plan was published in 1998.
NEW ACTION - Implement recommendations from the Water Level Management Plan								
2.1.1 Adjust the spill level of tunnel through Loe Pool bar	Agency					*	*	Project funding to be investigated.
Support Loe Pool Management Forum								
2.2 Produce catchment management plan for Loe Pool by September 1998 and carry out appropriate actions identified	Loe Pool Forum	20k	*	*				The Catchment Management Plan was published in September 1998.
Support and report on actions identified through Loe Pool CMP								
Negotiate Countryside Stewardship Scheme Target Area status	MAFF, EN, CWT	U		*				Done
Encourage farmers to enter land into CSS	FWAG, NT			*	*	*	*	Several organisations are carrying out farm visits to promote CSS. Additional funds are being sought to consolidate this work.
UWWTD monitoring and Helston STW (see Action 1.1) Following completion of 3 year survey into nutrient loadings, assess loadings from sources including Cudrose	Agency						*	Survey is ongoing until 2000.
Evaluate nutrient inputs from Coronation Lake, septic tanks, fish farms and take actions where appropriate	Agency		*	*	*	*	*	UWWTD monitoring is taking place throughout the catchment. If monitoring shows anything we will look to investigate further. At present no significant evidence of nutrient problems
R&D into mesocosm following completion of works at Helston under UWWTD.	NT, EN, Agency							Will assess benefits to speed up restoration of Loe Pool after installation of improvements to Helston STW.
Survey shoreline and marginal flora	NT				*			Planned for 1999

Action	Lead Body	Cost (£)	Financial years					Progress Year 1
			97	98	99	00	01	
Develop River Cober floodplain scheme to reduce sediment input and to enhance quality of floodplain habitats through WLMP review. Monitor hydrology of willow carr to evaluate effects of implementation of Water Level Management Plan	Agency, EN, NT  NT			*	*			Initial assessment to be carried out by River Restoration Centre. Following this appropriate actions and management can be prioritised. Some water table measurements have been taken and will be continued pending comments from river floodplain scheme study.
Management of public use Encourage public awareness of nature conservation value of lower reaches of River Cober	NT				*			Being carried out in 1999
Minimise public use of lower River Cober paths to reduce disturbance to wetland flora and fauna.	NT				*			Options to be considered. Implementation to be part of publicity initiative
Negotiate enforcement of Loe Pool angling regulations including submission of catch records	NT				*			To be implemented as soon as possible
Negotiate production of NT whole farm plans. Promote project nationally to ensure best practice is received and to share experience	NT				*			To be carried out in 1999 including detailed assessment of buffer zone management. Seminar being arranged for local riparian land managers.
Investigate removal of Water Net from Loe Pool								Funding unlikely at present
Reduce pollution from street drainage in Helston Education campaign in Helston on pollution from street drainage and kennels  Improve street cleaning and maintenance of drains  Assess feasibility of screening Helston road runoff	Kerrier DC   Kerrier DC							Agency will support any initiatives with advice and leaflets as necessary.   <i>There has been no progress reported on these actions.</i>
Fisheries Investigation of Loe Pool								
2.3 Carry out qualitative fisheries surveys in Loe Pool.	Agency	U		*	*			Survey carried out in 1998. Report to be issued in 1999. Further study in 1999.
Investigate means of removing perch from pool to conserve trout population	NT, Agency				*			Survey showed an imbalance in fish populations. Outcome of research likely in late 1999.



## Hayle Estuary

Hayle and the adjacent coastal habitat is heavily protected with conservation and historic designations as well as having as yet unrealised potential for redevelopment.

Sediments in the Hayle Estuary are contaminated by centuries of industrial activities including mining and power generation. The top layers of silt are likely to be less heavily contaminated by metals and other toxic substances than the layers further down. Before any redevelopment could take place the Agency would require an environmental assessment over the full suite of contaminants and over the full depth of works. Any work would carry a strong potential for contamination of the estuary.

### Wildlife

The Hayle Estuary is the most south-westerly estuary in Britain, adjacent to the important bird migration routes that traverse the Lands End peninsula to the west. The Estuary is a site for feeding and roosting habitats for a wide variety of bird species including wildfowl and wading birds such as the Teal, Ringed Plover, Curlew and Dunlin. In recent years more than 242 bird species have been recorded in the estuary, including 90 wintering bird species with numbers totalling over 18,000.

The Dunes exhibit a rich and diverse flora, plants of particular note that can be found in the area include Portland Spurge, Bulbous Meadow Grass and Mountain St. John's Wort which are nationally scarce.

The unique nature of the wildlife in the estuary includes the rare gillhead bream, which has been recorded in Camsew pool.

### Hayle Harbour

Plans have been presented to the Agency and a planning application submitted to Penwith DC for the proposed regeneration of Hayle Harbour, providing marinas, hotels and leisure facilities. In addition to its unique conservation value, Hayle Harbour and Estuary has recognised potential for re-development. The opportunity exists to write a planning brief in a partnership composed of the Local Planning Authority, the Agency and other bodies, which would supplement the existing local plan. This guidance would provide a framework for potential developers to use in their own planning process, so that the conservation and heritage designation and issues such as contaminated land can be considered at an early stage. The Harbour by its very nature and previous uses, is known to be a contaminated site.

The proposed area for development falls within the Hayle Harbour and Carrack Gladden Site of Special Scientific Interest.

Whilst the Agency is supportive of the plans in principle to regenerate the Hayle area, any such development must be of a sustainable nature given the high ecological and archaeological status of the locality.

### Historic audit

The Agency has completed a desk based historic audit of the Hayle Estuary. The report will be published in the near future. Recommendations of the report and actions arising are currently being considered.

Action	Lead Body	Cost (£)	Financial years					Progress Year 1
			97	98	99	00	01	
Carry out Historic Audit of Hayle Estuary and appropriate actions arising from it								
3.3 Carry out Historic Audit of Hayle Estuary and appropriate actions arising from it	Agency	1.2 k	*					The audit has been completed.
NEW ACTION Carry out assessment of fish populations within Camsew pool								
Undertake an assessment of fish populations within Camsew pool.	Agency	U						

## 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 at certain sites or for certain species

### Water level management

For wetland sites in England and Wales, formal strategies are being produced in order to 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.

Following liaison between the Agency, English Nature and Cornwall Wildlife Trust a water level management statement was published in 1998 which recommended maintaining the *status quo* at Loggans Moor. A water level management plan for Loe Pool was published in 1998 (see 2.1).

### Marazion Marsh

Marazion Marsh SSSI contains the largest reedbed in Cornwall, as well as other wet habitats such as grazing marsh and willow carr. The area is a reserve, managed by the Royal Society for the Protection of Birds. It is an important site for bitterns. We are working with the RSPB over a number of issues in the marsh.

We will be carrying out a qualitative assessment of the fish species present within Marazion Marsh.

### Cornwall Bio-Diversity Action Plan

Following the publication of the Cornwall Bio-diversity action plan in July 1998, the Agency, as one of the lead partners in this initiative, has agreed to undertake a large number of actions covering habitats and species in Cornwall. The list of actions for which the Agency is a lead organisation or one of the leading partners, specific to this catchment, can be found in Appendix 1. The full list of actions for all the partners can be found in the Cornwall Biodiversity action plan.

### Wetland creation at Drift Reservoir

Drift Reservoir is an important wetland site but has very little emergent tall vegetation where bitterns and other birds can shelter. We have funded the creation of 1600 square metres of reedbed at Drift Reservoir which will be completed this year.

### Japanese Knotweed

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 try to prevent its further spread and to control its growth in those areas where it currently exists. Representatives from County and District councils, the Agency, the National Trust, Cornwall Wildlife Trust, SWWL, English China Clays International (ECCI) and many more were present at the conference. Our flood defence maintenance teams are seeking to adopt the best practice for the control of Japanese Knotweed developed by the group.

We have sponsored a countywide survey of Japanese Knotweed which is being compiled by the Botanical Society of the British Isles, and will be available in a geographical Information System 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 is available from this office. We are also working with the International Institute of Biological Control with a view to finding funding sources for further research and trials.

### Bait-digging

Bait-digging occurs on much of the foreshore in the plan area, however on part of the Hayle estuary an existing byelaw prohibits bait digging. Cornwall Wildlife Trust are currently carrying out a bait-digging and bait-gathering review. We will liaise with CWT on their findings.

Action	Lead Body	Cost (£)	Financial years					Progress Year 1
			97	98	99	00	01	
Produce water level management plan for Loggans Moor								
4.1 Produce plan by September 1998	Agency / EN / land-owners		*					Report concludes that no change in the water level should occur
Implement best practice to manage water levels								
4.2 Manage water levels at Marazion Marsh for the needs of wildlife	RSPB							No further action is anticipated, as the management plan is being implemented by RSPB.

Action	Lead Body	Cost (£)	Financial years					Progress Year 1
			97	98	99	00	01	
Fisheries survey of Marazion Marsh								
Qualitative survey of eels and other fish species in Marazion Marsh	Agency				*			Survey to be carried out Autumn 1999.
Analyse eel tissue samples		U						If funding becomes available.
Support Cornwall Biodiversity Initiative and Biodiversity Action Plans for Key species and habitats								
4.4 – 4.4.10 Support Cornwall Biodiversity Initiative and Biodiversity Action Plans for Key species and habitats	Agency							Please see Appendix 1
Work with partnership bodies and landowners to enhance natural environment								
4.5 Undertake research into wet woodland to enable appropriate management - Cornwall wide project, although the Willow Carr at Loe Pool is receiving specific attention	Agency / others	10 K						This is one of the key areas addressed by the Cornwall Biodiversity Initiative.
4.5.1 Improve information on pond creation, through the Agency 'Pond Form', surveys, reviews, best practice	Agency / FWAG / CWT	2 K						A trial form will be used this year in Cornwall, if successful this will form the basis for a pond information booklet for regional and National use.
NEW ACTION - Assess effects of bait-digging								
Review current practices Map current areas of digging and quantify crop Research effects	CWT	U			*			We and other interested parties will carry forward any appropriate recommendations when the review is complete.

## Fisheries Management

### 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.

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

### Bass size limit

Currently there is a difference in the size limit for bass caught within and outside the Hayle estuary. Within the estuary the minimum landing size is 36cm. Outside the estuary the size is 37.5cm. To resolve this anomaly we have sent proposals to MAFF for permission to create a new bylaw to raise the minimum landing size limit to 37.5cm.

A review of legislation in all estuaries is currently underway.

### Herring netting

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.

### Decline in fish numbers

Results from fishery surveys have indicated a decline in fish numbers on the River Cober at Vellanewson, Penberth stream, Boswama Stream and Lamoma Stream. We intend to carry out investigations at these sites in 1999/2000 to determine the cause of the decline in fish numbers.

### Obstructions

Within the plan area there are several obstructions that are considered to prevent the access of migratory fish. Surveys of these sites and assessment of the economic feasibility of taking actions to remedy the access problem now forms part of the Fisheries Habitats Improvement plan.

Action	Lead Body	Cost (£)	Financial years					Progress Year 1
			97	98	99	00	01	
Create byelaw to increase minimum bass size limit								
5.1 Create byelaw to increase minimum bass size limit	MAFF	U						There has been no further progress on this action to date. Consultation continuing with MAFF.
Legalise appropriate herring netting practises								
5.2 Need to identify netmen	Agency	U						We have not been able to identify any Herring netmen to date.
Prevent introduction of non-native fish species into freshwater and the marine environment								
5.3 Update database on distribution of non-native species	Agency	5 k			*			A stillwater database has been prepared and visits to collect further information are due to start in 1999/2000.
5.3.1 Publicise regulations and hazards of fish disease	Agency	U						The fisheries department continues to publicise the "buyer beware" policy to fisheries owners
Assess areas of potential improvement and carry out appropriate works								
5.4 Investigate cause of decline in fish numbers on: River Cober at Vellanewson Boswama Stream Lamorna Stream Penberth Stream	Agency	U			*	*		Investigation work is due to start in 1999/2000.
5.4.1 Identify areas for potential improvements	Agency	U						This action forms part of the habitats improvement plan which is currently ongoing.
5.4.2 Survey obstructions to assess economically feasible actions	Agency	U						This action forms part of a county-wide habitats improvement plan which is currently ongoing.

## **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 in the past by the NRA, and the subsequent positive response from the farming community. However, farming along with other sources continue to have an impact on water quality within the catchment through diffuse pollution.

The area is widely used for the production of early potatoes, brassicas 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.

### **Sedimentation**

We are concerned over the effects of silt on water courses. Silt can come from many sources including agricultural and forestry activities particularly bank and bed erosion and runoff. Other sources include mineral extraction and quarrying. 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 and industry to identify and put into place management techniques in sensitive locations to reduce loadings of silt from the various sources. The Soil Code for the protection of soil is available from MAFF and the Agency would promote the use of practices within this document in preventing such sedimentation from runoff.

### **Irrigation**

Seasonal spray irrigation of crops can lead to a heavy demand on water resources. This is usually met by water stored in irrigation reservoirs and flooded mine systems. We will promote the use of off-stream winter filled storage systems for irrigation reservoirs, particularly where sited in places where they can benefit the natural wildlife.

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.

### **Waste spreading to land**

The practice of spreading certain controlled wastes to land has the potential to cause pollution of controlled waters and possible loss of conservation value if not managed appropriately.

Certain controlled wastes may be spread on land where an agricultural benefit or ecological improvement can be demonstrated. These wastes can be spread under exemption from waste management licensing provided that the applicant can demonstrate that the activity will not cause harm to the environment or present :-

- 1 Risk to water, air, soil, plants or animals; or
- 2 Cause nuisance through noise or odour; or
- 3 Adversely affect the countryside or places of special interest.

The Agency is currently reviewing its internal guidance on the processing of land spreading applications to ensure that potential pollution effects or habitat loss do not occur.

### **The Groundwater Regulations**

The Groundwater Regulations became fully adopted on 1 April 1999 and are intended to protect the quality of groundwater by:

- Preventing the discharge to groundwater of substances prescribed in List I (see Appendix 3, EC Dangerous Substances Directive)
- Limiting the discharges to groundwater of substances prescribed in List II

The regulation requires written authorisation from the Agency to tip for the purposes of disposal of any listed substance.

This is particularly relevant for sheep farming as the disposal of sheep dip will require an authorisation. The implementation of the regulations has been widely advertised and the Agency would advise potential applicants to make contact at the earliest possible opportunity. The Agency will give advice and guidance to any one who may be affected.

Action	Lead Body	Cost (£)	Financial years					Progress Year 1
			97	98	99	00	01	
Continue to monitor the effects of pesticides and take appropriate action where necessary								
6.1 Carry out additional pesticide monitoring in order to keep abreast of the introduction of any new pesticides being used	Agency	U	*					Due to resource implications this field work will stop at the end of March 1999.
6.1.2 Sample eels and eel tissue for heavy metals and pesticides	Agency / Penwith DC	U	*					Work on the Newlyn River has been done
6.1.3. Advise on land management to prevent soil loss and pesticide runoff	MAFF / FWAG	U						This issue is being dealt with in conjunction with run-off issues and is periodically reviewed.
Encourage protection of semi-natural habitat from waste disposal activities								
6.2 Encourage protection of semi-natural habitat from waste disposal activities	Agency / Landowners							Action on this issue will follow publication of guidelines.
6.2.1 Review of waste spreading to land operations.	MAFF/ Landowners/ Agency			*				This issue needs reviewing in a comprehensive and integrated way to ensure that the activity does not cause undue impact. The review will involve all interested parties.
NEW ACTION - Promotion of the Soil Code, particularly in conjunction with changes of land use and crop patterns.								
6.3 Promote good practice the through day to day work, to work towards RQO compliance	MAFF / Agency	U			*	*	*	
6.3.1 Following the completion of a project by South Wessex Area into controlling silt, and research into the effects of silt by the Agency's salmon centre, we will undertake recommendations where feasible.	Agency, FWAG,	U			*			

### 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 for hundreds of years. Historically water quality has been affected by mine drainage.

#### South Crofty

In August 1997 South Crofty Plc informed the Agency of their intention to close the South Crofty tin mine during 1998. This allowed the Agency to consider the environmental effects of the closure and as a result a report on the effects of the closure was prepared, which concluded that once pumping ceased, the water level in the mine would take 3 to 5 years to overflow. There is not likely to be a repeat of the 'Wheal Jane scenario', where a rapid rise in water level within the mine caused an overflow of minewater within months of closure. The Agency has identified the most appropriate environmental solution to ensure no deterioration in water quality in the Red River. A review of the contingency plan for treatment of the overflow when it occurs has been completed.

#### Archaeological remains

Many historic mining sites are of national and international value in terms of their industrial heritage and some have national biological value particularly bryophytes. The central mining district around Camborne and Redruth is amongst sites currently being submitted as a World Heritage site for Cornish mining.

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

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.

#### Red River (Redruth)

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 Red River valley needs to balance the needs of the variety of different interests, including archaeology, conservation, recreation and flood defence. Kerrier District Council are currently leading a project to investigate the feasibility of enhancing part of the flood plain. Any work in the flood plain must comply with flood plain policy.

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

Action	Lead Body	Cost (£)	Financial years					Progress Year 1
			97	98	99	00	01	
Work with all involved to ensure that any closure of South Crofty has minimum adverse environmental effects. In view of recent developments at South Crofty work on this issue is on hold at present.								
7.1 Review sources of copper and zinc on the Red River	Agency	U						Preliminary work on sources and loadings has been completed.
7.1.2 Review quality, quantity and location of minewater overflow predictions using recent monitoring data	Agency/CC C/ Kerrier DC	U						A report has been published 'South Crofty Strategic Closure study'
7.1.3 Review contingency plan	Agency	U						The review has been completed.
7.1.4 Instigate contingency plan with other bodies involved	Agency/CC C/ Kerrier DC	U						This work is ongoing.
Promotion of methods to prevent or minimise waste from contaminated ground								
7.2 Promote policy to be included in forthcoming Cornwall Waste Local Plan	Agency / CCC	U						In July 1999 Section 57 of The Environment Act will be implemented, whereby the Environment Agency and the Local Authorities will, identify and compile a register of contaminated sites. The Agency and the Local Authorities will then have the statutory powers to bring about the remediation of contaminated land.
7.2.1 Give advice on Best Practice options to treat metalliferous waste arisings if necessary	Agency							The Agency promotes best practice for the development of metalliferous areas as and when such development arises.
Long term management of Red River Valley								
7.3 Produce guidelines for the management of the Red River floodplain	Kerrier DC							A management plan has been prepared as part of the Cornwall Biodiversity initiative.

### **Contaminated land**

Prior to the Environment Act 1990 and the Water Resources Act 1991 the problems of contaminated land were tackled almost exclusively in the context of redevelopment where there was the objective of economic benefit linked to environmental enhancement, or to prevent the pollution of controlled waters. The provisions in the 1990 Act were not implemented and are to be replaced by the new provisions.

In 1993 the government announced a review of policy on contaminated land and liabilities, arising in part from the strength of feeling expressed against the consultation paper on proposals for local authorities to keep public registers on land subject to potentially contaminated uses (section 143 of the 1990 Act). The Government's Framework for Contaminated Land (1994) which gives the outcome of the policy review, identified the need for a modern, specific contaminated land power to replace the historical statutory nuisance provisions and to improve clarity and consistency in dealing with contaminated land.

Section 57 of the Environment Act 1995 introduces a new Part IIA to the Environment Protection Act. This allows for the identification of land which poses a threat of significant harm to human health or the environment, or of pollution of controlled waters, under existing conditions. It also provides for the enforcing authority to ensure that appropriate and cost-effective remediation is carried out to deal with the problem, either voluntarily or by way of a remediation notice. It therefore provides a mechanism to deal with those sites which are causing concern now because of the presence of contaminants, and which would not otherwise be dealt with through other pollution control legislation, or under the planning system. Contaminated sites which are to be redeveloped continue to be dealt with through planning and development controls.

This has not yet been enacted and consequently we have no current duties under this legislation

The legislation is supported by statutory guidance and regulations, which together provide significant detail on the enforcement of the regime, including a statutory definition of contaminated land, guidance on how to interpret this (particularly for threats to human health), and guidance on what may be required by way of remediation.

The new legal definition of "Contaminated Land" incorporates the concept of risk assessment procedures and considerations. They involve the identification of the contamination "Source", the establishment of pollutant "Pathway" and the presence of a receptor or "Target". This pollutant linkage then raises potential for significant harm to humans, the ecology, buildings, livestock/crops or the pollution of controlled waters.

The pollution of controlled waters is defined as "the entry into controlled waters of any poisonous, noxious or pollution matter or any solid waste matter." Controlled waters include all groundwater, inland waters, and estuaries and which are regulated by the Environment Agency. The contaminated land provisions cannot cut across the Agency's existing duty under Section 161 of the Water Resources Act 1991.

#### **Duties of the Environment Agency**

The duties of the Environment Agency under the legislation are to:-

- i) Give site specific guidance on remediation requirements.
- ii) Act as the regulator for "Special Sites".
- iii) Compile a National Report on the status of contaminated land.
- iv) Sponsor technical research and act as a centre of expertise

#### **Duties of the Local authorities**

The duties of the Local Authorities under the legislation are to:-

- i) Inspect their areas to identify contaminated land
- ii) Consult the Agency on pollution of controlled waters
- iii) Ensure remediation of land identified as contaminated
- iv) Transfer "Special Sites" to the Agency
- v) Maintain Remediation Registers

Local Authorities have the sole responsibility for the identification of land which meets the statutory definition, although the Agency has a duty to provide information and a power to provide advice in connection with pollution of controlled waters. The Agency's primary role is as enforcing authority for those sites categorised by the regulations as "Special Sites". These are currently categories of land which, provided the statutory definition is met, are considered by Government most appropriately regulated by the Agency. This could be because we already regulate those sites through other pollution control legislation (eg nuclear sites), or because our historical background means that we have the most appropriate experience (eg sites with significant water pollution), or for other particular reasons (such as MoD land).



## Sea level rise

### Shoreline Management Plans

A Shoreline Management Plan sets out sustainable coastal defence policies and objectives for the future management of the coast.

The Agency is a member of the coastal group that is preparing Shoreline Management plans. This group comprises the County Council and all maritime local authorities. The two plans covering the area are Lizard to Lands End and North Cornwall Coast. These are currently programmed to be consulted upon and implemented in 1999 and will contain the agreed management option for each section of the coast.

Appraisal of strategic coastal defence options has led to the preferred options for sections of the coast in the North Cornwall Coast SMP shown in the table below. The sections, referred to as management units, are stretches with coherent characteristics in terms of both natural coastal processes and land use. The preferred options are currently being consulted on.

Management Unit	Preferred option
Sennen Cove and Whitesand Bay	Hold existing defence line along the developed frontage to protect assets. Carry out no coastal defence except for safety measures elsewhere in Whitesand Bay to maintain the sand supply for Sennen Cove beach.
Porthmeor Covering the main tourist beach in St Ives	Hold the existing line defence line along main developed frontage of Porthmeor to maintain facilities.
St Ives Covering St Ives from 'The Island' to Pedn Olva.	Hold the existing defence line throughout this developed frontage to protect the commercial centre of the town.
Carbis Bay From Pend Olva to Porth Kidney Sands.	Hold the existing line for defended frontages to maintain existing tourist assets and infrastructure. Carry out no coastal defence except for safety measures along the undefended developed coastal slope in the short term. Cliff stability monitoring to assess the acceptability of localised intervention.
Hayle Estuary Shoreline of the estuary including sand dunes on either side of its mouth and the banks of the estuary upstream to Griggs Quay.	Hold the line on the sand dunes either side of the estuary mouth to prevent natural roll back and loss of various assets. Also hold the existing defence line within the estuary to protect harbour and other developments.
Hayle and Gwithian Towns Covers the continuous beach between mouth of the Hayle Estuary and the Godrevy headland	Carry out no coastal defence except for safety measures along cliff frontages due to low erosion risk, also short term at Godrevy. Dune management between Common and Upton Towns to maintain important habitats and prevent dune roll-back onto holiday camps. Hold the line strategy is recommended to protect the extraction site.
Portreath Includes developed frontage around Portreath Beach	Hold the existing defence line to maintain harbour structures, protection of properties and highway.
Porthtowan	Hold existing defence line along the defended frontage including sand dune management in the centre of the cove. Carry out no coastal defence except for safety measures on cliffs to the south to maintain habitat integrity.
Trevaunance Cove The cove forms a coastal extension of the village of St Agnes	Carry out no coastal defence except for safety measures short term on cliffs on west side, with cliff monitoring to determine long term trend. No intervention on cliffs to the east as they provide a key source of beach material.

### Flood defence schemes

Flood defence schemes are designed to accommodate future sea level rises. Information regarding the predicted rise in sea level is produced by the Intergovernmental Panel for Climate Change. The net sea level rise estimates are 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.

#### 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.

Action	Lead Body	Cost (£)	Financial years					Progress Year 1
			97	98	99	00	01	
Prepare Shoreline Management Plans (SMP)								
8.1 Prepare Shoreline Management plans (SMP) lead organisation- Kerrier District Council	CCC, LPAs, Agency	38k total	*	*	*			The final drafts for the SMPs are due to be consulted on and then adopted in 1999.

#### 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 2.

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

Funding for capital improvement schemes is currently under pressure. Central government grant aid 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.

#### Bye Report and Agriculture Select Committee

The severe flooding which affected large areas of central and eastern England and parts of Wales over the Easter weekend 1998 called for the Agency to take urgent action and to learn the wider lessons from this extreme event.

To help achieve this the Agency called for an independent investigation that would lay out plainly the facts about the floods and the Agency's handling of them. This investigation was carried out by Peter Bye and his technical advisor Dr Michael Homer and the report is known as the Bye report. In a Parliamentary Statement on 20 October 1998 on the Bye Report by the Minister Elliot Morley the Agency was given clear targets to achieve a seamless and integrated service of flood forecasting, warning and response by April 2000. To achieve this the Agency is required to undertake a thorough review of the whole system by mid-1999 to ensure the Agency is focused to deliver the required service, that management arrangements make this possible and that there are clear lines of accountability and responsibility.

The Agency, having considered the Bye Report, taken due regard of the Minister's statement, compared the needs of the Report with the findings of the Agriculture Select Committee on Flood and Coastal Defence 30 July 1998 and comments from MAFF, have drawn up a comprehensive action plan.

The action plan will be implemented nationally over the next eighteen months. The plan includes the following actions:

- Review of flood warning dissemination plans and major incidents plans
- Review current supervisory duties and develop new approach to their use.
- Review and publish consistent flood risk maps for use in regulating development.
- Review emergency response arrangements with local authorities and carry out joint exercises using new arrangements. This must include clear understanding of the roles of all organisations involved.
- Introduce improvements in the Agency network of telemetered river flow monitoring.
- Carry out a complete visual survey of all flood defences including main river, ordinary watercourses, tidal and sea defences and in future carry out regular updates.
- Revise the Agency's National Flood Warning Strategy and establish a national flood warning centre.
- Review ways of warning the public, improve provision of data from telemetry systems and its use in giving warnings.

- Target flood warning communications at vulnerable temporary locations such as caravan and camping sites.
- Work with Government to review research into the impact of climate change on flood frequency.

In general, the South West region is well advanced in dealing with the issues raised in the actions listed above. However, a very large additional workload is still required to meet these actions within the time allowed.

#### Flood alleviation schemes

Currently in our capital programme are schemes to alleviate existing flooding at Portreath, St Ives and the repair or replacement of the River Hayle Tidal Barrier. The flood alleviation scheme at Perranporth was substantially completed in August 1998 and the scheme at Porthleven was completed on time in April 1999. New homes and businesses are protected by a combination of banks, ramps, walls and a new culvert which will discharge into the inner harbour.

#### Major Incident Plans

We also have a lead role in the Major Incident Plans for areas where there are large numbers of properties at risk from flooding. These plans are drawn together by the Agency with input from the County Emergency Planning Officer, Police, Fire Service, Local Authorities and other relevant bodies. Major Incident Plans are scheduled to be completed by Summer 1999.

#### Flood Warning Level of Service Study (FWLOSS)

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. The Flood Warning Level of Service Study for the Cornwall area is programmed to commence in May 1999 and is due to be completed by August 1999. The results from this study will identify locations where a flood warning service can be introduced or improved and will supplement actions from the Bye Report. Any improvements that are identified, will be assigned priority taking into account the needs of the whole region.

Action	Lead Body	Cost (£)	Financial years					Progress Year 1
			97	98	99	00	01	
Construct flood alleviation schemes								
9.1 Construct scheme at Perranporth	Agency	1830 k	*	*				The works were substantially completed in August 1998.
9.1.2 Construct scheme at Porthleven	Agency	522 k		*	*			Completion April 1999.
9.1.3 Assessing options at River Hayle Tidal Barrier	Agency	142k						Work in progress
9.1.4 Consider scheme for Stennack River St Ives	Agency	U						On hold awaiting funding
9.1.5 Consider scheme for Portreath	Agency	405 k						On hold awaiting funding
Complete Flood Warning Levels of Service Study (FWLOSS)								
9.2 Improvements will be identified following completion of study	Agency	10 k			*			FWLOSS commenced in February 1998 across the South West region and is due to be completed by August 1999. The Cornwall area is programmed to commence in May 1999.

## 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 drainage

The Agency continues to inform developers and planners of concepts through provision of advice and information. Including good practice guides on sustainable drainage. We are currently putting together local examples of source control techniques to inform planners and developers.

### Pressures on water resources

The availability of water resources is an increasingly important issue across England and Wales. Whilst the Government has said that it does not expect water resources to be a reason for development proposals being rejected, the provision of adequate water supplies could have an influence on the timing of developments.

The Agency comments on all county and district plans, and any individual planning applications that will have a significant water use, with respect to water resources and indeed water efficiency (as all new homes are now metered water efficiency can reduce customer's bills). However we can only comment on water resources in general as the specifics depend on which sources the relevant water company would plan to use to supply the development. In light of this we would wish to see water companies added to the consultation list.

Action	Lead Body	Cost (£)	Financial years					Progress Year 1
			97	98	99	00	01	
Identification of flood risk areas through Section 105 surveys								
10.1 Schedule of locations to be established	Agency	U						The use of baseline surveys has included the identification of Flood Risk Areas. This will be an ongoing activity. Further modelling requirements are being assessed and prioritised and work in the Cornwall area is due to commence in 1999.
Review areas which are vulnerable to increased development								
10.2 Produce annual consultation guides for district councils.	Agency	Core	*	*	*	*	*	Agency specialists work with Local Authorities and the water companies to review vulnerable areas.
Promote the adoption of development restraint areas								
10.3 Present revised consultation guides to planning committees and explain reasons for the need for development constraint.	Agency	U	*	*	*	*	*	The Kerrier consultation guide was published in September 1998. The Penwith Consultation Guide was published in March 1998. The Carrick consultation guide was published in March 1998. The plan is due for review in 1999.

Action	Lead Body	Cost (£)	Financial years					Progress Year 1
			97	98	99	00	01	
Promote sustainable drainage								
10.4 Agency is continually developing national policy on source control and will promote it for inclusion in planning policy.	Agency							Continuing to inform developers and planners of concepts through provision of advice and information. Including good practice guides on sustainable drainage.
10.4.1 Promotion of source control techniques and Best Management Practices	Agency							A source control video 'Natures way' was shown to local authority planners at meetings on Section 105 maps during Spring 1998.

### Meeting current and future demand for water

Water is an essential but finite resource. One of the Agency's roles is to protect the water environment (lakes, rivers and wetlands) from over abstraction whilst considering the needs of the public, agriculture and industry for water.

The Agency is not responsible for the supply of water to households and industry but has a central role in water resources planning in England and Wales. We contribute to protecting the environment by looking at current use of water in the home and at work and the water that is available for these uses without damaging the environment. This may involve correcting any imbalances or over-abstraction. We continue to protect the environment by comparing future demands for water with water availability and balancing the two in an environmentally sustainable manner. To achieve this we work closely with the water companies requiring them to submit detailed Water Resource Plans (see section in Protection through Partnership).

#### Managing Current Demand

To manage water resources the Agency issues abstraction licenses for specific volumes of water from identified sites. The abstraction licence may include conditions that prevent abstraction if there is a threat of environmental damage. The abstraction licensing system for England and Wales was reviewed during 1997/98 and a number of changes were proposed and consulted on. Taking Water Responsibly, a paper detailing the Government decisions following consultation, was published in March 1999 and is available from DETR. 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 Future Demand

Before any new resources can be developed or existing resources developed further, the Agency must be satisfied that water companies have looked in detail at a range of appropriate options. These include encouraging people to use water more efficiently (demand management) increasing the efficiency of uses of sources (resource management) and increasing efficiency of pipe networks (distribution management) as well as reducing their leakage towards an acceptable level. We are unable to identify public water supply demands on a LEAP area basis and therefore the precise impact of new development on water resources in the plan area is difficult to predict.

Demand management involves a number of different initiatives including metering. Meters are installed in all new domestic properties connected to the water company supply and South West Water Limited's (SWWL's) domestic customers have the option to have their home metered at a subsidised price between now and April 2000, after this they will be able to have a meter fitted free of charge. 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 promote efficient use of water and the Agency expects that they should pursue this duty with imagination and vigour. SWWL have published water efficiency plans which contain strategies to deliver water saving by the customer. Their 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 save water. Water efficiency advice is also available to business customers. SWWL has a free educational resource pack, Running Water, which provides National Curriculum support for 8 to 13 year olds.

Extra resources can be obtained from making savings through reducing leakage. The Water Companies are set leakage targets each year by the Government's financial regulator OfWat. They are bound to meet these but can set lower targets if they wish. SWWL have a target of 84.0 Million Litres a day (ML/d) for 1999 / 2000. Their actual leakage figure for 1997 / 1998 was 101.1 ML/d which was below the target for that year. SWWL also have a public leakage target for the end of March 2000 which is 15% of the water that they supply. They are currently on track to meet this target.

Water companies use areas known as Resource Zones in order to help manage the way in which they supply water. The West Cornwall LEAP area is part of the Colliford Resource Zone which supplies water to most of Cornwall. This is supplied primarily by Colliford reservoir supported by an number of other smaller sources in the area such as Drift Reservoir and the River Hayle.

#### Promotion of water saving measures

The average family uses approximately 146 cubic meters (32,000 gallons) of water per year and within the home there are many opportunities to help reduce this figure, for example :

turning taps off, showers rather than baths;

washer replacement, rapid repair of leaks;

low flush toilets, normal rather than power showers, water efficient washing machines and dishwashers

water butts, trigger switches on hose pipe nozzles, drought resistant garden plants, mulch on flower beds to retain moisture and restrict weed growth

The workplace and industry also offers many opportunities to reduce water use (and save money). Measures outlined above may be suitable together with process/site specific measures. Examples of these and other water efficiency measures are detailed in Saving Water on the right tracks 2.

Rainwater collected from roofs and recycled household waste wash water (greywater) can be used for toilet flushing and garden watering. It offers potential for large water savings but to encourage more rapid development and take up of suitable systems there is a need for water quality standards to be established for this use.

#### Eclipse

South West Water have indicated that due to the capacity of their distribution system, they can supply mains water to approximately 1 million people in Cornwall for the period around the eclipse. They have applied for and have been granted a temporary licence to abstract from an existing abstraction point on the River Hayle at St. Erth to assist in meeting increased demand. Visitors over and above 1 million may need to be supplied from private water sources. The Agency is likely to have to deal with increased number of applications for private water abstractions, and possible enforcement action relating to illegal use of existing licenced abstraction sources or unlicensed sources.

Action	Lead Body	Cost (£)	Financial years					Progress Year 1
			97	98	99	00	01	
Modelling of Colliford Strategic Supply Zone to determine the yield, best use of available resources and future developments								
11.1 Agency to audit SWW reassessment of yields for all sources within the Colliford supply zone	Agency	40 k	*	*				This has been completed and the drought management plan has been incorporated within the Colliford operating agreement.
Prepare water resources plans in conjunction with SWW and publish a revised regional water resources development strategy								
11.2 Prepare water resources plans in conjunction with SWW and publish a revised regional water resources development strategy	Agency / SWW	80 k for whole county	*	*				SWW's water resource plan was completed on the 1 <sup>st</sup> April 1999. A report on by the Agency 'Planning Public Water Supplies' was sent to DETR in June 1999.
11.2.1 Produce Drought Management Plans.	Agency	15 k						This has been completed and the drought management plan has been incorporated within the Colliford operating agreement.

## Waste management

The management of waste is regulated through a series of European directives and UK legislation. This legislation sets out not only the Environment Agency's regulatory powers but also puts responsibilities on all parties involved in the management of waste.

### The Waste Hierarchy

One of the European directives, 'The Framework Directive on Waste' introduced the idea of a 'waste hierarchy' which forms the basis for waste planning today. The waste hierarchy is a list of waste management options based on the sustainability and environmental costs of each option. The best solution is to avoid producing any waste in the first place i.e. reduction of waste, while landfill is the option with the most environmental impact. The waste hierarchy sets out a framework to allow a move away from the current reliance on disposal of waste to landfill to more sustainable methods of waste management. This will allow the best practicable environmental option (BPEO) for the disposal waste to be achieved.

#### Waste Hierarchy

1. Reduction of waste
2. Re-use of waste
3. Recovery of waste, including incineration with energy recovery, composting and recycling
4. Landfill and/or incineration with no energy recovery

The waste hierarchy is only a guide to waste management options. The best practicable environmental option will depend on the waste, and the availability of different types of waste management facilities close to where waste is generated. Therefore solutions to waste management need to be decided locally.

Waste minimisation enables every business, organisation and individual to make a difference. A National resolve to make less waste in the first place is an absolute priority, but is easier said than done. The Environment Agency has a mission to educate and influence in this direction.

### Organisations responsible for Waste Management

There are a number of bodies responsible for the planning and regulation of waste collection, management and disposal

#### The Environment Agency

The Agency has a wide range of responsibilities relating to waste management both locally and at a national level.

- We regulate and advise organisations and individuals that are involved in the transportation, handling, treatment and disposal of controlled wastes. We also carry out monitoring and enforcement activities to ensure that waste management licence conditions are met.
- We play an active role in the development of the national waste strategy, for example, in carrying out the national waste production survey, and in supporting waste minimisation schemes.
- We advise both county and district councils on waste matters. We also work in partnership with local authorities to control fly tipping.
- We work with government on the development of policy.
- We provide information to the public and interested bodies through the 'public' registers, technical guidance documents, and LEAPs
- We carry out R&D to ensure that our activities are based on a sound scientific basis

#### Central Government

The government is responsible for the development of a Statutory National Waste Strategy for England and Wales, which is due for completion in early 2000, to address the following:

- Ensure waste is managed without endangering human health or the environment.
- Establish a network of adequate waste disposal facilities taking account of best available technologies.
- Encourage the prevention or reduction of waste production.
- Encourage the recycling, reuse, reclamation and use of waste as a source of energy.

#### County Councils

Corwall County Council is the waste planning authority and the waste disposal authority. As waste planning authority it is responsible for developing a countywide waste strategy, the Waste Local Plan. It also has the responsibility for determining planning applications relating to waste management activities. As the waste disposal authority it is responsible for arranging for the disposal of household and commercial waste and the provision of civic amenity sites.

#### District Councils

As the waste collection authority, district councils have the responsibility for the collection and management of household waste. They are also the instigators of local initiatives and waste minimisation publicity campaigns.

#### **Waste Contractors**

There are a large number of waste contractors operating within Cornwall. The principle operator for the disposal of household waste is County Environmental Services Ltd (CES) who are wholly owned by Cornwall County Council. CES manage four landfill sites and a transfer station in the county, and are contracted to take all household waste produced in Cornwall.

#### **Cornwall Waste Management Forum**

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

#### **The Community**

We all produce a great deal of waste and we all have a 'Duty of Care'. The 'Duty of Care' is a law that applies to anyone who produces, keeps, transports or disposes of waste. It says that we must take reasonable steps to keep waste safe, and if we give the waste to anyone else we must be sure that they are authorised to take it and can dispose of it safely.

We can also help by reducing the amount of waste that we each produce, by re-using items, by supporting facilities and initiatives such as composting or recycling schemes. While local authorities and the Agency can give advice on managing waste, we all have a part to play in helping to reduce the waste problems in Cornwall.

#### **Waste Survey.**

In April 1999 the Environment Agency neared completion of its National Waste Production Survey. Agency staff and consultants have visited or telephoned many thousands of businesses. Information on the types and quantities of wastes being generated and how they are being managed is being entered onto the National Waste Database. After a period of detailed analysis the information will be used to inform the Government's Statutory National Waste Strategy. Local Authorities and the waste management industry will be able to use the statistics to assist their policy decisions on the provision of future waste facilities. It is believed that the Survey is the largest investigation ever into waste production.

#### **The Great Cornish Waste Debate**

This event took place at The Hall for Cornwall on 10<sup>th</sup> March 1999, following an idea from the Cornwall Waste Management Forum. The occasion provided an opportunity for many sectors of the local community to discuss the management of the increasing quantity of waste in Cornwall. Coinciding with the consultation stage of the County Council's Draft Waste Local Plan and in the run up to the Government's announcement of the Statutory National Waste Strategy the discussion was especially timely.

Concepts of the Waste Hierarchy and Best Practicable Environmental Option were applied to the Cornish waste management situation. This highlighted some of the barriers which tend to prevent many recycling options from being the most sustainable choice for Cornwall. Demands for local recycling activities are being made but in reality there is very little likelihood of paper mills, aluminium smelters, plastics reprocessors or steelworks being established here.

There was considerable discussion on the topic of incineration with energy recovery. Planning difficulties and public concerns about incinerators have to be weighed against the need for a waste management system for Cornwall which removes our almost total reliance on landfill. Even with incineration there would be a continuing need for landfill to dispose of unburnt residues.

Analysis of a questionnaire distributed to members of the public is currently underway. The opinions expressed will be taken into account in the formulation of policy by the Waste Management Forum.

#### **Eclipse 1999**

Additional visitors will generate increased liquid and solid waste. Guidance has already been prepared by the Agency for managing different types of waste arising from campsites. South West Water have advised that for the three week period around the Eclipse they will not be able to receive any additional tankered sewage at their licensed Sewage Treatment Works. Additional workload for the Agency is expected in dealing with discharge consent applications, and registration of exemptions from waste licenses. The Agency will be assessing any applications under the standard criteria for discharge consents or for exemptions from waste licences.

#### **Camborne School of Mines Waste Research Project**

Camborne School of Mines are currently carrying out a feasibility study looking towards development of a leading centre for research into the treatment of waste. This study funded through European, local and private finance has gained considerable support from the Waste and Mining industry. The centre will utilise mineral processing technology and apply it to a variety of waste disposal issues. The Agency is supportive of the concept and is represented on the project steering group.



#### Composting on mineral waste sites.

Some derelict mining sites may be capable of being remediated by means of spreading a layer of composted plant matter (greenwaste) over their surface. This would achieve the dual benefits of land reclamation with waste recovery. Final land use is likely to be of a recreational or amenity nature. Site selection and planning of such projects would have to take account of the proximity and quantity of suitable wastes, access for deliveries, conservation and heritage issues, future land use, etc. Such schemes are hardly likely to be undertaken on a commercial basis but the Agency would seek to encourage partnerships between land owners, local authorities, funding bodies and community groups who may be able to combine to set up sustainable projects. Manpower and machinery resources would be required. Not all derelict mining sites would lend themselves to such treatment and full consultation with relevant bodies would be necessary.

#### Waste to Energy

Existing landfill sites are reaching capacity and new sites are becoming increasingly difficult to set up. Many recycling options face logistical, economic and sustainability barriers. There is a growing realisation that energy from waste schemes may represent the Best Practicable Environmental Option for wastes arising in Cornwall.

County Environmental Services Ltd. has announced its intention to seek planning consent for an energy from waste plant. This is essentially a power station fuelled by waste. A number of possible sites are being assessed against selection criteria which have been agreed between the Company, County planners and the Environment Agency. From site selection to the operational stage for such a major development is likely to take a period of years.

Incinerators which comply with the latest emission control requirements are much improved from the previous generation dating from the 60's and 70's. Public concern has to be answered with accurate information and open discussion. This method of waste management is undergoing something of a revival in the UK.

#### Waste Minimisation for Small and Medium Sized Enterprises

Small and Medium-sized Enterprises (SMEs) produce a quantity and variety of wastes, particularly in the take-away food sector. Two of the issues needing addressing are over-packaging and littering.

The Environment Agency would like to be involved with SMEs to develop waste minimisation initiatives. In West Cornwall the Agency has collaborated with three District Councils and the Plymouth-based Payback organisation to facilitate a Waste Minimisation Club of local businesses. At a launch meeting in Redruth on 27<sup>th</sup> April, 1999 eight firms expressed an interest in membership. The ability of the Agency and other organisations to contact individual businesses can be limited by competing demands on staff time. A more efficient and productive approach is through partnership arrangements as above, targeting specific business sectors or geographic areas.

Waste minimisation has several advantages for businesses; cost savings, improved environmental performance and customer confidence. Several waste minimisation groups up and down the country have recorded spectacular successes for member Companies with rapid payback on quite small investments.

Action	Lead Body	Cost (£)	Financial years					Progress Year 1
			97	98	99	00	01	
Carry out waste arisings survey								
12.1 Carry out waste arisings survey.	Agency	U		*	*			The National Waste Production Survey is currently underway and is due for completion in March 1999
Reduce waste production								
12.2 Reduce waste production	Agency			*	*	*	*	Waste minimisation advice is offered to businesses during routine visits and more especially as part of waste survey interviews. A West Cornwall Waste Minimisation Group is in the planning stages involving the Agency, Payback District Councils and local business in partnership.
Reduce waste requiring disposal by encouraging and developing recycling initiatives								
12.3 Develop and promote campaigns initiatives and partnerships with businesses and other organisations.	Agency			*	*	*	*	Copies of the Agency Waste Minimisation and Commercial Waste Recycling Directory have been sent to local businesses.

Action	Lead Body	Cost (£)	Financial years					Progress Year 1
			97	98	99	00	01	
Identify criteria for waste disposal sites								
12.4 Consultation on Cornwall County and Local Authority plans for the identification of disposal sites and through the licensing process.	Agency			*	*	*	*	The Agency has been consulted on the County Waste Local Plan. We will consider any proposals for sites as and when they are put forward.
Reduce fly tipping								
12.5 Rigorous enforcement and publicity to minimise fly tipping	Local authorities/ Agency			*	*	*	*	The introduction of a memorandum of understanding between the Local Authorities and the Agency gives the Local Authorities the lead on dealing with minor fly-tipping incidents.
Draw up strategies for sustainable waste management								
12.6 Draw up strategies for sustainable waste management.	Agency/ County Council/ District Councils			*	*	*	*	An Agency representative gives waste strategy advice at meetings of the Cornwall waste management forum which comprises officers and members of the County and District Councils.
NEW ACTION - Preparation of a county-wide Local Authorities Integrated Waste Management and Recycling Plan for 1999 to 2005	District councils, Agency			*				DETR requested district councils to review their recycling plans. The Agency is a consultee to the development of the updated Recycling plan
NEW ACTION - Working together to manage our waste								
Encourage and educate communities and individuals in waste management	District councils, Agency			*	*	*	*	
Use facilities and support campaigns such as recycling, composting schemes etc	All			*	*	*	*	

#### Effects of Penzance Dry Dock

Penzance Dry Dock was engaged in the maintenance of ships, including the application and removal of Tributyltin (TBT) anti-fouling compounds from ships. The dock is closed and operations have stopped.

The following actions discussed in the action plan published last year are therefore on hold until the future of the docks is established.

Action	Lead Body	Cost (£)	Financial years					Progress Year 1
			97	98	99	00	01	
Investigate potential effects of dockyard processes on the environment - Further investigations on hold until future of Docks is established.								
13.1 Water quality survey	Agency		*					The initial water quality survey has now been completed
13.1.2 Carry out dust assessment	Operator		*					The assessment has been completed.
Carry out improvement programme								
13.2 Treatment of TBT releases to water by October 1999	Operator		*	*	*			On hold

## 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

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.

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.

### Trevaylor Stream

Investigations into the causes of poor water quality on the Trevaylor stream have been completed and a report detailing the findings is in production.

Action	Lead Body	Cost (£)	Financial years					Progress Year 1
			97	98	99	00	01	
Carry out investigations to identify causes of poor water								
14.1 Investigate cause of failures on the Trevaylor Stream	Agency	5 k						Investigations have been completed and a draft report is being circulated for comment.
Investigate causes of poor biological quality								
14.2 Investigate causes of poor invertebrate biology on Tregillowe Stream Chyandour Brook Holywell Stream	Agency	U						No investigations have yet been undertaken

## 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.

Action	Lead Body	Cost (£)	Financial years					Progress Year 1
			97	98	99	00	01	
Draw up strategy								
15.1 Conference arranged to plan future work.	Cornwall Air Quality Forum							The Conference was convened and the CAQF is now co-ordinating the Local Authorities response to the National Air Quality Strategy. The Agency is represented on the Forum.

## **Pollution prevention and contingency planning**

### **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.

### **Eclipse – August 1999**

Cornwall County Council anticipates that there will be a large number of additional visitors to Cornwall to see the Solar Eclipse on 11 August 1999. While the duration of the totality of the Eclipse is only a few minutes, there may be substantial numbers of additional visitors in Cornwall for around three weeks (31 July to 21 August), who are planning to see the Eclipse as part of a longer holiday.

The County have established a steering group, and a number of working groups to allow representatives from the emergency services, statutory bodies including the Environment Agency, utilities and the tourist industry to plan for the Eclipse.

The Eclipse is seen as an opportunity to promote tourism and generate additional income for Cornwall, with the establishment of substantial numbers of temporary camp sites to accommodate additional visitors. Although the Agency recognises that additional visitors represent an economic opportunity for Cornwall, we are also concerned that such an increase in population poses a real threat to the environment of Cornwall. This is both in terms of managing and disposing of waste appropriately, and the threat posed by illegal abstraction from existing licenced private water supplies to supplement mains water supplies and the illegal use of unlicensed sources. Following the Easter Floods we are also very concerned about the safety of people on campsites close to watercourses, which may be at risk of flooding.

District Councils are receiving a large number of enquiries from landowners wishing to set up temporary campsites

The peak summer population of Cornwall is around 800,000 people (resident and tourists). The infrastructure (sewerage, waste disposal, emergency services) in Cornwall has been developed to cope with maximum normal visitor numbers. The Police Authority has estimated that the maximum capacity of the roads is around 1.2 million people. South West Water have estimated that they could supply mains water to a total population of around 1 million.

While the actual numbers of visitors arriving in Cornwall will not be known until they arrive we have to plan for substantial numbers of additional visitors.

If the anticipated numbers of people arrive in Cornwall, the risk of pollution incidents is likely to increase, and travel by road will be extremely difficult. We will need to plan our business accordingly in particular statutory monitoring, regulation and pollution event response.

Our primary duties are to use our statutory powers to protect the environment, and to protect people and properties from flooding. We are planning to use our regulatory powers to secure these objectives for the Eclipse.

We have adopted this approach for the following reasons:

- Without careful management, there is potential for environment damage to occur both during the Eclipse period and in the longer term;
- The environment of Cornwall is extremely important to the economy of Cornwall, both the rural economy and the tourist industry; for example bathing waters and fisheries must not be affected by discharges failing consent standards, or illegal discharges;
- The interests of existing water users, whose livelihoods or health may be affected, must be secured; for example, by ensuring that there is sufficient water supply for livestock watering; protection of the quality of private water supplies;
- The unique ecology of Cornwall must be protected; including sites which have statutory designation.
- The safety of people in flood risk areas should not be compromised.

## Appendix 1 Cornwall Biodiversity Action Plan

The following are a list of actions involving the Environment Agency from the Cornwall Biodiversity Initiative - Biodiversity Action Plan.

The full list of actions for all organisations and partners can be found in the Cornwall Biodiversity Action Plan.

Action	Lead Body	Cost (£)	Financial years					Progress Year 1
			97	98	99	00	01	
Support Cornwall Biodiversity Initiative and Biodiversity Action Plans for Key species and habitats								
4.4 Produce an Action Plan for Wetlands by September 1998 Target: To ensure no further loss of wetland habitats Target: To identify and restore natural drainage regime to one degraded wetland site by 2000	Agency CWT	U						The action plan was published in July 1998.
4.4.1 Produce an Action plan for Heathlands by June 1998 Target: To ensure no further loss of heathland habitat	EN	U						The action plan was published in July 1998 as part of the Cornwall Bio-diversity Action Plan.
4.4.2 Produce an Action Plan for boundary features, particularly hedgerows and field margins by June 1998	CWT	U						The action plan was published in July 1998 as part of the Cornwall Bio-diversity Action Plan.
4.4.3 Produce a Farmland Species Action Plan by June 1998	RSPB	U						The action plan was published in July 1998 as part of the Cornwall Bio-diversity Action Plan.
4.4.4 Produce a generic Seabirds and Wader Action Plan by June 1998	RSPB	U						The action plan was published in July 1998 as part of the Cornwall Bio-diversity Action Plan.
4.4.5 Produce biodiversity targets for Metalliferous mine sites in the catchment	EN / Agency / CWT	U						The action plan was published in July 1998 as part of the Cornwall Bio-diversity Action Plan.
4.4.6 Produce a management plan for the Red River Valley to ensure that its Biodiversity potential is maximised by September 1998	Agency	U						Completion of the plan is due in 1999.
4.4.7 Produce biodiversity targets for Estuaries	EN / Agency / CWT	U						The action plan was published in July 1998 as part of the Cornwall Bio-diversity Action Plan.
4.4.8 Produce biodiversity targets for coastal zone Target: Identify and restore two degraded coastal sites by 2002	EN / Agency / CWT	U						Completion of the targets is due in 1999.
4.4.9 Produce Species Action Plans by 2003 Status of a number of species within the catchment need clarifying	EN / CWT	5 K						Work towards the completion of the plan is ongoing.
4.4.10 Utilise LIFE data to identify sites where existing blocks of priority habitat can be linked	Agency / EN / CWT	30 K						The Agency is becoming closely involved in English Natures project 'Tomorrows Heathland Heritage'. Which offer opportunities to deliver targets.

Action	Lead Body	Cost (£)	Financial years					Progress Year 1
			97	98	99	00	01	
Actions for individual species and habitats arising from the Biodiversity Action Plan								
Shore dock								
Establish monitoring and research programme of hydrological conditions at dune slack sites including identifying standards that will maintain shore dock populations	Agency / others	U						We are undertaking monitoring at Penhale dunes.
Little egret								
Ensure that little egret is taken into account in estuary management plans, candidate SACs and related single schemes of management	Agency / others	U						Work on this topic is ongoing.
Sea Birds and Waders of the Hard Coast								
Establish a framework to reduce net mortality in St. Ives Bay to insignificant levels								
Inform contingency planning (e.g. disaster planning, shipping route management) exercises of important areas for seabirds / hard coast birds.								
European otter								
Appointment of an Otter and River project officer, funded by the Agency, Cornwall Wildlife Trust and the Water Services Association. The officer will be responsible for looking after the interest of the otter population throughout the County.	Agency / others	U						The officer was appointed in March 1999
Farmland habitats and species								
Achieve more flexibility in allowing field exchanges within IACS where there would be conservation benefits	Agency / others	U						MAFF are currently being lobbied on this issue.
Lobby as appropriate in order to ensure improvements in air quality as technology arises and its application is practicable.								The Agency sits on the Cornwall Air Quality forum.
Wetland								
Recreate reedbed habitat on small sites (< 20ha)	Agency / others	U						This is a Cornwall wide initiative and sites are being identified at present.
Organise training day for planners/developers on potential for inclusion of wetland habitat (eg) reedbed, in new developments	Agency / others	U						This is a Cornwall wide initiative.
Create a register of sites, including a set of maps, in order to: identify existing wetland sites, and appropriate management for them; identify the potential for the extension of existing sites; identify suitable sites for restoration, taking account of the	Agency / others	U						The work is being scheduled at present.

Action	Lead Body	Cost (£)	Financial years					Progress Year 1
			97	98	99	00	01	
requirements of Cornwall priority species.								
<b>Coastal zone</b>								
Consider appropriate measures to limit damage to nesting birds and other wildlife through the activity of recreational motorised craft. Maintain awareness of all sports within the coastal zone, and their possible impact on biodiversity.								The Agency has recently appointed a regional recreation officer who will advise on the impact of recreation in the South West region.
<b>Estuaries</b>								
Ensure proper examination of the system through which bye-laws are created, given the difficulty of creating environmental bye-laws. By 2000	Agency / U others							The Agency is involved in the production of a Cockle Harvesting Bye-law.
Produce interpretative material which may be used in isolation, such as leaflet for each estuary, or integrated within existing publications	Agency / U others							Work on producing and disseminating information is ongoing.
<b>Wet woodlands</b>								
Safeguard and maintain all established semi-natural wet woodland sites	All partners	U						
Carry out study of wet woodlands in Cornwall leading to their identification, evaluation and the production of guidelines for easy evaluation on site, including management advice.	All partners	U						

## Appendix 2: Duties, powers and interests 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 direct powers) in:	Partnership :
<b>Water Resources</b> 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, developers, industry, agriculture and the public and the introduction of water-efficiency measures and suitable design and lay out 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.



Agency Duty :	The Agency has powers to:	The Agency has an interest (but no direct powers) in:	Partnership :
<p><b>Flood Defence</b> The Agency has a duty to exercise general supervision over all matters relating to flood defence throughout each catchment.</p>	<p>Control, through Land Drainage consents, the 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).</p> <p>Produce flood risk maps for all main rivers under S105 of Water Resources Act 1991.</p> <p>Undertake works to main rivers using permissive powers.</p> <p>Issue flood warnings relating to main river to the public, local authorities and the police.</p> <p>Consent mineral workings within 16 metres of main rivers.</p>	<p>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.</p> <p>Installation of surface water source control measures e.g. flood attenuation structures.</p> <p>Supervising the maintenance of ordinary watercourses which is a local authority remit, but may impact on main rivers.</p> <p>Installation of buffer zones which reduce flood risk and have significant environmental benefits.</p> <p>Urban and rural land use and measures that can reduce flood risk or the need for watercourse maintenance.</p>	<p>As a statutory consultee on planning applications within main-river floodplains, the Agency offers advice based on knowledge of flood risk. It also advises on the environmental impacts or proposed floodplain development.</p> <p>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.</p>
<p><b>Water Quality</b> The Agency has a duty to monitor, protect, manage and, where possible, enhance the quality of all controlled waters including rivers, groundwaters, lakes, canals, estuaries and coastal waters through the prevention and control of pollution.</p>	<p>Issue discharge consents to control pollution loads in controlled waters.</p> <p>Regulate discharges to controlled waters and into or onto land in respect of water quality through the issue and enforcement of discharge consents.</p> <p>Prosecute polluters and recover the costs of clean-up operations.</p>	<p>The control of runoff from roads and highways. This is a Highway Agency duty.</p> <p>The greater use of source-control measures to reduce pollution by surface-water runoff.</p> <p>Prevention and education campaigns to reduce pollution incidents.</p>	<p>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.</p>
<p><b>Air Quality</b> The Agency has a duty to implement Part I of the Environment Protection Act 1990.</p>	<p>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.</p> <p>Have regard to the government's National Air Quality Strategy when setting standards for the releases to air from industrial processes.</p>	<p>The vast number of smaller industrial processes which are controlled by local authorities.</p> <p>Control over vehicular emissions and transport planning.</p>	<p>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.</p> <p>The Agency wishes to liaise with local authorities in the production of their Air Quality Management Plans.</p> <p>The Agency will advise and contribute to the government's National Air Quality Strategy.</p>

Agency Duty :	The Agency has powers to:	The Agency has an interest (but no direct powers) in:	Partnership :
<p><b>Radioactive Substances</b> The Agency has a duty under the Radioactive Substances Act 1993 to regulate the use of radioactive materials and the disposal of radioactive waste.</p>	<p>To issue certificates to users of radioactive materials and disposers of radioactive waste, with an overall objective of protecting members of the public.</p>	<p>The health effects of radiation.</p>	<p>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.</p>
<p><b>Waste Management</b> The Agency has a duty to regulate the management of waste, including the treatment, storage, transport and disposal of controlled waste, to prevent pollution of the environment, harm to public health or detriment to local amenities.</p>	<p>Vary waste management licence conditions. Suspend and revoke licences. Investigate and prosecute illegal waste management operations</p>	<p>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.</p>	<p>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.</p>
<p><b>Contaminated Land</b> The Agency has a duty to develop an integrated approach to the prevention and control of land contamination ensuring that remediation is proportionate to risks and cost-effective in terms of the economy and environment.</p>	<p>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.</p>	<p>Securing with others, including local authorities, landowners and developers, the safe remediation of contaminated land.</p>	<p>The Agency supports land remediation and will promote this with developers and local authorities and other stakeholders.</p>
<p><b>Conservation</b> The Agency will further conservation, wherever possible, when carrying out water-management functions; have regard to conservation when carrying out pollution-control functions; and promote the conservation of flora and fauna which are dependent on an aquatic environment.</p>	<p>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.</p>	<p>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.</p>	<p>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.</p>

Agency Duty :	The Agency has powers to:	The Agency has an interest (but no direct powers) in:	Partnership :
<p><b>Landscape</b> The Agency will further landscape conservation and enhancement when carrying out water-management functions; have regard to the landscape when carrying out pollution-control functions; and promote the conservation and enhancement of the natural beauty of rivers and associated land.</p>	<p>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.</p>	<p>The landscape impact of new development, particularly within river corridors. This is controlled by local planning authorities.</p>	<p>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.</p>
<p><b>Archaeology</b> The Agency has a duty to consider the impact of all of its regulatory, operational and advising activities upon archaeology and heritage, and implement mitigation and enhancement measures where appropriate.</p>	<p>The Agency must promote its archaeological objectives through the exercise of its water-management and pollution-control powers and duties.</p>	<p>Direct protection or management of sites or archaeological or heritage interest. This is carried out by local planning authorities, County Archaeologists and English Heritage.</p>	<p>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.</p>
<p><b>Fisheries</b> The Agency has a duty to maintain, improve and develop salmon, trout, freshwater and eel fisheries.</p>	<p>Prosecute offenders who use illegal methods to take fish and can seek forfeiture of all associated equipment. 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. Regulate the introduction of fish species to rivers and lakes.</p>	<p>The determination of planning applications which could affect fisheries.</p>	<p>Many development schemes have significant implications for fisheries. The Agency will work with anglers, riparian owners, developers and local authorities to protect fisheries.</p>
<p><b>Recreation</b> The Agency has a duty to promote rivers and water space for recreational use.</p>	<p>The Agency contributes towards its recreation duty through the exercise of its statutory powers and duties in water management.</p>	<p>Promotion of water sports. This is carried out by the English Sports Council and other sports bodies.</p>	<p>The Agency will work with the Countryside Agency, the Sports Council, British Waterways and other recreational and amenity organisations to optimise recreational use of the water environment.</p>

### Appendix 3: The quality of surface waters

#### River Quality Objectives

The water quality targets that we use for managing water quality are known as River Quality Objectives (RQOs); these are based on the River Ecosystem (RE) classification scheme. The RE classification comprises five hierarchical classes as summarised below:

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

Where immediate solutions or resources are unavailable to resolve current water quality problems, we may also have set a long term RQO (LT RQOs). We measure compliance against RQOs but use LT RQOs as a basis for setting consents for new 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.

#### EC Directives

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

##### 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.

##### 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 the results to the 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.

##### 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. Sensitive areas are those waters that receive discharges from population equivalents of greater than 10,000, and are, or may become, eutrophic 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. We are responsible for auditing the results of these studies.

## 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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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

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**ENVIRONMENT  
AGENCY**



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