local environment agency plan

TAMAR ANNUAL REVIEW 2000

December 2000

ENVIRONMENT AGENCY

Further copies of this Annual Review can be obtained from:

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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 economy leads to:

Biodiversity and the physical habitat for wildlife being enhanced

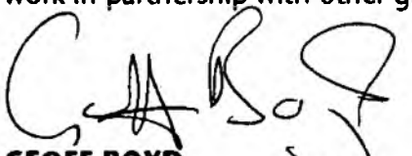
People's enjoyment and appreciation of the environment continuing to grow

Pressures from human needs being satisfied sustainably

Foreword

This is the combined Annual Review of the Tamar Estuary and Freshwater Tamar Action Plans. 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.



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1. Introduction

1.1 What is the Environment Agency?

The Environment Agency is one of the largest and most powerful environmental protection agencies in Europe. Our primary aim is to protect and improve the environment throughout England and Wales and to contribute to sustainable development through the integrated management of air, land and water.

The Agency was created by the 1995 Environment Act and started working in April 1996. It is officially a 'non-departmental public body' which means that it works for the public and has specific duties of its own. The Agency's main sponsor in the Government is the Department of Transport and the Regions (DETR). We also have links to the Ministry of Agriculture, Fisheries and Food and the National Assembly for Wales (NAW).

Our Role

The work of the Agency touches the lives of almost everyone within the Tamar area. We have a wide range of duties and powers relating to the environment. These include specific responsibilities for water resources, pollution prevention and control, flood defence, fisheries, conservation and recreation. We also act as statutory consultees on many aspects of the development planning process.

Our role is explained in more detail in Appendix 2.

This combined Annual Review of Tamar Estuary and Freshwater Tamar LEAPs

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 is why we review the Action Plan annually to follow the actions and report on them.

This annual review is in a different format to the last. We have combined the two LEAP reviews to form one document, providing a holistic and integrated view of the Tamar catchment. This also means that the reader can look at the catchment from source to sea. This is the only major change; all current actions from both LEAPs are included.

In July 2000 the Agency held an Annual Review Forum in Plymouth. A large number of interested parties were invited to discuss key local environmental issues. These discussions provided an interactive way forward, looking at new solutions and any new and up and coming issues. Feedback and new issues discussed at the Forum have been included in this document.

2. Area Overview

The area includes a diverse range of landscapes and wildlife habitats, from the Culm measures and the slopes of Dartmoor and Bodmin Moor to the extensive creeks and mudflats of the river estuaries and rolling hills supporting relatively intensive agriculture. This contrasts with Plymouth, a maritime city with a population of over 250,000.

The upper stretch is essentially rural in character, ranging from Culm grassland, open moorland to rolling hills intersected by steep sided valleys. There is no heavy industry here, but historically there was extensive mining activity, especially in a band running roughly from Bodmin Moor to Gunnislake and Tavistock, which has left its own legacy of abandoned mines and workings.

The economic health of Plymouth at the mouth of the estuary is closely related to the Defence industries that make up a large proportion of its employment. Plymouth is one of the largest ports in Devon and Cornwall and has a whole range of heavy and light industry. China Clay is locally important in the Lee Moor area in the east of the area. The rural parts of the area support a mainly agricultural economy.

Further up the area are the sizeable market towns of Launceston and Holsworthy. The population is scattered in small towns, villages and farms that give rise to challenges and problems in providing services. An influx of summer visitors to the area changes the pattern of demand for the summer season. Infrastructure such as water supply, sewerage systems and waste management must be designed to cope with seasonal patterns of usage.

3. Protection through Partnership

3.1 Working with others

The Agency influences many activities affecting the environment through the Environmental Protection Act 1990, the Environment Act 1995 (including amendments of the 1990) and other legislation. We must work in partnership with others to ensure that the actions in this LEAP get done and our vision for the area is realised.

Local Authorities

Local authorities are responsible for controlling land use through the planning procedure. Long term changes in land use can raise opportunities through redevelopment to tackle the issues of urban runoff, contaminated land and the renewal of river corridors. In addition, the support of community groups, individual landowners and businesses will be needed to tackle issues such as litter, pollution, private sector investment and river corridor enhancement.

Local Agenda 21 (LA21) "Think Globally - act locally"

We are in regular contact with Local Agenda 21 Officers across the two counties who are working on a number of sustainability projects in areas such as waste, biodiversity, energy, health, food and transport. In Plymouth the LA21 Group has recently produced the document 'For Generations Ahead'. This document is intended as a guide to the concerns of local people, bringing out common goals for the city. It includes such topics as: taking part, local needs, taking care of the environment, the world around us, getting around Plymouth, a healthier city, wealth and what's next. The document is available from Plymouth City Council, Environmental and Consumer Protection Department.

Land Use Planning and Environment Planning

Land use is the single most important influence on the environment, both positively and negatively. Government planning guidance highlights both the strong relationship between land use and environmental matters and stresses the importance of communication between local planning authorities and the Agency.

The control of land use change is primarily the responsibility of Local Planning Authorities (LPAs), through implementation of the Town and Country Planning Act. Local development plans provide a framework for land use change and are the key consideration in the determination of planning applications.

The Agency has produced guidance notes in its document "Liaison with Local Planning Authorities" which is available from our Area Office.

OFWAT

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

OFWAT has undertaken a review of water prices in order to develop a plan of improvements required for the period 2000-2005. This plan is known as 'Asset Management Plan3' (AMP3). In May 1998, environmental improvements were proposed by the Agency to the DETR through the document 'A Price Worth Paying'. The water companies submitted their strategic business plans in April 1999 and OFWAT made their final determination on these in November 1999.

South West Water (SWW)

SWW's Water Resource Plan, which was submitted to the Agency in spring 1999, required them 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. All water companies will be required to update these annually. The first annual update of this plan has been received and is being reviewed by the Agency.

Cornwall Waste Management Forum

The Forum, which is made up of representatives from 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.

Tamar Area of Outstanding Natural Beauty (AONB)

The Tamar Valley Area of Outstanding Natural Beauty (AONB) was designated in 1995 and consists of the estuaries and valleys of the Tamar, Lynher and Tavy. The Tamar Valley Countryside Service has just launched a management plan formulated in consultation with statutory bodies, the local community and interest groups.

Tamar Estuaries Consultative Forum (TECF)

TECF is a partnership management group for the Tamar Estuary comprising: Sutton Harbour Company, West Devon Borough Council, Queen's Harbour Master, Associated British Ports Plymouth, Caradon District Council, Cattewater Harbour Commissioners, Cornwall County Council, The Countryside Agency, Devon County Council, Devon Sea Fisheries Committee, English Nature, Environment Agency, MAFF, City of Plymouth, South Hams District Council and South West Water. TECF has recently produced a Tamar Estuaries Management Plan which is available for consultation at present. The plan looks ahead to the next five years of holistic management and development of the Tamar estuaries to the benefit of all.

Yealm Estuary Management Plan (YEMP)

This plan is the product of a partnership forged between those organisations with a responsibility or interest in the estuary and is the result of an extensive consultation exercise conducted on behalf of this partnership. The plan provides guidance on ways in which issues identified from this consultation may be addressed with common aims and objectives.

Lynher Project
The Lynher Project was created by Cornwall FWAG and the Environment Agency to look at ways in reducing the damaging loss of soil (and therefore valuable nutrients) from bare fields in winter and the resulting water pollution. The project is backed by Cornwall Environmental Trust relating to its aims for environmental gain. As part of this project any farmer in the Lynher catchment (including all its tributaries) may ask for advice on reducing soil loss.

The Lynher Project is linked to the Thyamis Project - financially supported by the EU's LIFE programme. The Thyamis Project is looking at similar farming issues concerning the Kalamas river catchment in the north-western region of Epiros in Greece. The money from the EU's LIFE programme has provided additional funding for the Lynher and the opportunity for the two projects to compare progress and pool ideas to mutual benefit. Farmers in the Lynher catchment may also apply for grants to carry out small capital works schemes such as the fencing of streams, the sowing of soil holding crop cover, or the creation of buffer strips.

A tour of some of the Lynher farms by Greek farmers is planned for late winter/early spring next year and it is hoped that some of the farmers in the Lynher catchment will visit their Greek counterparts later that year.

Westcountry Rivers Trust
The Agency is working in conjunction with the Westcountry Rivers Trust (WCRT) on the Tamar 2000 SUPPORT (Sustainable Practices project on the River Tamar). This project is now in its fourth year; within this time it has achieved approximately 500 farm visits, with 300 integrated farm and river management plans completed and implemented. The Trust works in partnership with the Agency, other regulatory bodies and the local farming community towards the aims of reducing erosion and sedimentation of gravel or prevention of sedimentation in spawning gravel, reducing diffuse pollution and conserving and restoring wetland habitats.

Flood Defence Task Force Groups
To help resolve flood defence issues in Cornwall and Devon, three flood defence task forces are being set up by the Agency. The groups will look at effects of land use, funding for flood defence works and network links between bodies involved in flooding matters. Membership of the groups will consist of interested bodies such as district and parish councils.

Other Initiatives
There is 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. 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, be more efficient in our actions, avoid duplication (or conflict) and make the most of limited budgets.

Partnerships
As an organisation we recognise that much of our work may be best achieved through working with private industry, the public and other environmental

organisations, supporting their work and possibly opening the door to other funding sources.

Recent strategies put forward by the Regional Development Agency and ones in support of the European Structural Funds (Objective 1 and Objective 2), have indicated the key role that the sustainable development and the environment play in an economic regeneration programme. The Agency has been consulted in the development of these strategies and will look to influence the programmes to both protect and enhance the local environment.

In particular we are keen to develop projects that produce sustainable environmental improvements through education or training. European Structure Funding could act as a catalyst for opportunities to link public and private finance to draw down further European support, and we would welcome an approach from any organisation looking to pursue projects that result in environment protection or improvement. An example of this is the recent 'Flooding Summit' where the Agency, local authorities and other organisations met to discuss ways to support the flood defence requirements of Cornwall and Devon. Key messages that came out of that summit identified changing land use and climate change as the major causes of the increased flood problems. Finding solutions to these problems in an appropriate and sustainable way must require partnerships with industry, landowners and farmers, as well as requiring the Agency and others to work with the local communities to make it happen.

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 Agency is currently working in partnership on a number of waste minimisation initiatives.

We invite readers to contact us at any time to raise new issues or suggest new actions; this ensures the LEAP process is a live one, which constantly evolves to meet the changing needs of the local environment.

4. Actions

The following sections provide a summary of our progress to date on the issues identified in the action plans. They are not presented in any order of priority. The tables included in each section chart the progress we have made on specific actions. The sections also include any new issues that have become apparent since the action plan was developed.

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 participating organisations may have limited resources and powers, consequently some work may take longer than indicated owing to funding availability, government policy and more urgent priorities.

In order for the Agency to make the best use of its available resources all work has to be prioritised. This may mean that lower priority work cannot be undertaken at a particular time. However, work identified in the plan can be reassessed should resources become available.

4.1 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 area based on:

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

Long term RQOs have been set for 13 stretches in the area. These are objectives we would like to achieve, but the actions required to achieve them are long term and 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.

Discharges

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

Discharges, which have the greatest potential to affect the quality of the water environment, have numeric concentration limits attached to their consents. These limits may apply to individual substances or to groups of substances and are set at levels needed to protect the environment from harm and ensure

compliance with River Quality Objectives (RQOs), EC Directives and International Conventions.

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

South West Water's Sewage Treatment Improvement plans
A number of South West Water sewage discharges are known to cause or contribute to the exceedence of water quality targets. These discharges will be improved through the Water Companies investment programme.

The Water Companies investment programme for the period 2000-2005 is known as Asset Management Plan 3 (AMP3). AMP3 has been developed along the guidelines agreed between the Environment Agency, the Department of the Environment, Transport and Regions and the water services companies and OFWAT.

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

Effluent disposal issues
Pyworthy STW caused RQO non-compliance in Derril Water. The discharges from Holsworthy, Lydford and Lewannick STWs could cause RQO non-compliance in the receiving water, if the STWs were to operate to the maximum limit of their consent. In addition, Lewannick STW requires improved secondary treatment to meet the requirements of the Urban Waste Water Treatment Directive (see Appendix 3). Improvements at all these works will be carried out under AMP3.

EC Urban Wastewater Treatment Directive
We are responsible for making sure that discharges receive the level of treatment specified in this Directive. Monitoring previously undertaken on the rivers Tavy, Lynher and Haye Valley stream did not provide sufficient evidence to support any designation of these stretches as Sensitive Areas under this directive.

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

EC Bathing Waters Directive
The Environment Agency seeks to improve the degree of compliance with the Directive by ensuring that discharges to, or in the vicinity of, bathing waters are of adequate quality. The required improvements are included in the AMP programmes of the relevant Water Companies.

Improvements to effluent discharges

There are six designated bathing waters in this LEAP area. At four of the six sites we monitor freshwater inputs to the bathing waters. This monitoring is not a requirement of the Directive but is carried out in order to help identify potential causes of non-compliance.

Wembury, Plymouth Hoe East, Plymouth Hoe West

SWW sewage discharges have contributed to bathing water non-compliance at Wembury, Plymouth Hoe East and Plymouth Hoe West. Improvements to the discharge from Wembury STW and the ongoing Plymouth Clean Sweep scheme will improve bathing water quality at these locations.

Kingsand and Cawsand

Sewage from the neighbouring villages of Kingsand and Cawsand is presently discharged without treatment to the bathing waters of the villages. During the AMP3 improvement programme all flows from Kingsand and Cawsand will be pumped over to Milbrook STW for treatment. Work is in progress at present.

Bovisand

The quality of Bovisand bathing water is affected by run-off from agricultural land and by the discharge from a private STW. Improvements are being made to the operation of the private STW and visits to local farms are being undertaken to ensure that best farm management practices are followed to ensure the minimum environmental impact from agricultural run-off is achieved.

Table 2

Action	**Lead Body**	**Cost (£)**	**Financial Year**					**Progress**
			98	99	00	01	02	
Issue 1: Promote good management of private sewage treatment plants								
1.1 Produce leaflet to promote care and maintenance of seasonally affected private STWs	Agency	U	*	*	*			Leaflet is currently being drafted - when resources permit it will go into production
Issue 2: Sewage treatment works (STWs) and storm sewer overflows impacting on water quality								
2.1 Crowndale (Tavistock) Improve works.	SWW	U		*	*			New storm sewage tanks completed at the STW.
2.2 Review discharge consent if required.	Agency	U			*	*		The discharge consent will be reviewed in line with any improvements
2.3 Review discharge consent if required.	Agency	U			*	*		The discharge consent will be reviewed in line with improvements.

Action	Lead Body	Cost (£)	Financial Year					Progress
			98	99	00	01	02	
2.4 Plymouth Central Complete Plymouth Central Clean Sweep Scheme.	SWW	U			*	*		Ongoing work due to be completed by end of 2000.
2.5 Yealmpton Investigate impact of storm sewer overflows on water quality in the River Yealm and seek improvement where necessary.	Agency		*	*	*	*		The Agency has found no known problems at present. Investigations are now complete.
Issue 3: Improvements to sewage treatment works to be carried out in AMP3 (years 2000-2005)								
3.1 Callington STW Improve works.	SWW				*	*		Improvements will be carried out in AMP3 in order to improve water quality downstream of the works. These will include improved treatment and addition of a consent standard for ammonia and will be completed by March 2001.
3.2 Holsworthy Improvements to treatment to ensure protection of river quality objectives.	Agency / SWW					*		We expect improvements to Holsworthy STW to be completed in September 2001.
3.3 St Germans - improvements expected to protect Shellfish Waters	SWW	U						Proposed completion date August 2004
3.4 Cargreen - Improvements expected to protect Shellfish Waters	SWW	U						Proposed completion date August 2004
3.5 Ernesettle/ Saltash - improvements expected to protect Shellfish Waters	SWW	U			*	*	*	A number of improvements are expected during the next five years

Action	Lead Body	Cost (£)	Financial Year					Progress
			98	99	00	01	02	
3.6 Wembury - improvements to sewerage system expected to protect Bathing Waters. We also expect the inclusion of UV treatment on the final effluent.	SWW	U			*	*	*	There are continuing improvements to secure BW compliance.
3.7 Newton Ferrers - Improvements expected to achieve improvements in RQOs and add ammonia standard to the consent	SWW	U			*	*		Proposed completion date March 2001
3.8 Stokehill/ Crapstone - improvements are expected to protect RQOs and ammonia standard to the consent.	SWW	U			*	*	*	Proposed completion date March 2003
3.9 Brixton - improvements expected to protect Shellfish Waters	SWW	U			*	*	*	Proposed completion date 2004.
3.10 Camels Head, Plymouth - improvements expected to protect Shellfish Waters	SWW	U			*	*	*	Improvements expected to protect Shellfish Waters
3.11 Pyworthy STW - protection of downstream RQO through improvements to Pyworthy	SWW	U			*	*		We expect improvements to Pyworthy STW to be completed by Sept 2001
3.12 Lydford STW- protection of downstream RQO	SWW	U			*	*	*	We expect improvements to Lydford STW to be completed by March 2003

Action	Lead Body	Cost (£)	Financial Year					Progress
			98	99	00	01	02	
through improvements to Lydford								
3.13 Lewannick STW- compliance with UWWTD and protection of the downstream RQO	SWW	U			*	*	*	We expect improved treatments facilities to provide appropriate treatments at Lewannick STW by March 2005

4.12 Effects of Tributyltin (TBT)

Tributyltin, or TBT, is an anti-fouling agent used to prevent the accumulation of barnacles and other marine life on the hulls of ships. In 1987, in recognition of its highly toxic effects on the environment, its sale for use on vessels under 25m was prohibited. However, its use is still permitted on vessels greater than 25m in length. The International Maritime Organisation has recommended that the application of TBT paints to any vessels should be banned from 1 January 2003, and that TBT paints should be removed from all vessels by 1 January 2008.

A TBT survey was undertaken in the Yealm Estuary on 22nd September 1998. Throughout the estuary waters, the levels found were within acceptable environmental standards, and the EQS was not exceeded. There were exceedences with the requirements for the Dangerous Substances Directive at 2 sites within the Yealm Estuary. Slightly elevated values occurred in two sediment samples at one section in the estuary, which may represent historic contamination. The results for the oysters showed that they were not adversely affected by TBT.

Work is in progress to identify the causes of exceedences of Dangerous Substances Standards for TBT on the Yealm. Following discussions with the Agency, International Paints agreed to undertake a programme of improvements to ensure that their discharge to the Yealm Estuary complies with a more stringent consent. Infrastructure improvements at the site have been carried out and the consent was issued in October 2000. Initial investigations suggest that the exceedances are likely to have been as a result of historic use of TBT paints and local boat maintenance.

Dog whelk survey of Cornish Coast

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

Suitable coastal areas were sampled for the presence of dog whelks, proof of successful breeding (egg clusters and juveniles) and evidence of sex-change effects (imposex) in mature specimens.

The main findings of the report were:

- All sites that reported a population of dog whelks showed a degree of imposex
- All populations, with the exception of that at Padstow, contained juveniles
- Good recovery was observed at many sites studied in 1986 and 1998. At other sites the populations had disappeared completely
- Repopulation of areas where dog whelks are now extinct is only likely to be achieved by artificially re-introducing breeding adults or viable egg capsules. (Sharelle Geileskey, February 2000)

Table 2

Action	Lead Body	Cost (£)	Financial Year					Progress
			98	99	00	01	02	
Issue 1: Effects of Tributyltin								
1.1 Investigate sources of tributyltin (TBT) in the River Yealm	Agency		*					Monitoring has been undertaken. The results have been collated and are being discussed with English Nature to determine if further action is necessary

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

EC Dangerous Substances Directive

We anticipate improvements will be brought about through the Plymouth Central Clean Sweep Scheme.

The site downstream of Crowndale Sewage Treatment Works failed to comply with the EC Dangerous Substances Directive in 1995, 1996, 1997 and 1998 due to elevated levels of copper and zinc. This non-compliance may be due to a combination of natural enrichment from the surrounding area and the discharge from Crowndale Sewage Treatment Works. Investigations have been carried out and the significant sources of copper and zinc are historical mineral workings upstream of Crowndale.

Table 3

Action	Lead Body	Cost (£)	Financial Year					Progress
			98	99	00	01	02	
Issue 1: Poor water quality requiring further investigation								
1.1 Investigate causes of exceedence of EC Freshwater Fish and Dangerous Substances Directives standards on River Tavy and failure to comply with long term RQO.	Agency	7k	*		*			Currently analysing data from investigations to try to clarify relative contributions of potential sources.
1.2 Investigate sources of copper and zinc Environmental Quality Standards (EQS) failure in Plymouth Sound.	Agency	1k	*	*				3.2, 3.3 and 3.4 are not priority actions as improvements through Plymouth Clean Sweep scheme are expected to change water quality significantly. We will continue to monitor under the Directive and take action if failures continue to occur after the scheme is in place.
1.3 Review discharge consents if required.	Agency							
1.4 Investigate other significant sources into the estuary.	Agency							Planned sewerage improvements should reduce levels of organic enrichment.
1.5 Investigate general decline in mollusc community at monitored sites in the Hamoaze.	Agency							Further sampling will be undertaken on completion of Plymouth Central Clean Sweep sewage improvements.
1.6 Sample macro invertebrates in the vicinity of Devonport Dockyard.	Agency							

4.1.4 Nutrient Enrichment

We undertake chemical and biological monitoring using a number of classifications to determine whether water quality has an effect on river life. Where results indicate nutrient-enrichment (eutrophication) we undertake investigations to identify the cause.

The Agency has produced an information leaflet on aquatic eutrophication that is available from your local Agency Office.

4.1.5 Protecting Groundwaters

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 of the regulations
- Limiting the discharges to groundwater of substances prescribed in List II

The regulation requires written authorisation from the Agency to dispose of any listed substance to groundwater.

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.

We will continue to ensure that operators use good management practices and use existing codes to minimise the risk of pollution.

4.2 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, and the subsequent positive response from the farming community. However, farming, along with other sources, continues to have an impact on water quality within the area through diffuse pollution.

Effects of land use on river ecology
We are concerned over the effects of silt on the fishery and the ecology of rivers. Silt can come from many sources including agricultural and forestry activities particularly bank and bed erosion and runoff. Other sources include mineral extraction, quarrying and highway drainage.

To assess the relative levels of siltation within spawning gravels, a national Agency project is deploying silt traps in key locations on significant salmonid

rivers. The assessment was compromised during the winter of 99/00 due to unusually high river flows but some useful data was collected and is being analysed.

In parallel with assessing the extent of the problem, we are seeking ways to reduce sediments from entering the watercourse. We will look to extend recent successful collaborative fencing and land management schemes to prevent erosion of riverbanks and to reduce run-off from the land. We particularly wish to promote good management of moorland areas to prevent damage from overgrazing and ditching works. To this end, we have produced and distributed a leaflet explaining the risks of ditching work, and encourage landowners to involve the Agency in discussing any proposed works.

The Agency and FWAG are currently working together on a project to assess practical techniques to reduce the impacts of silt on watercourses, for example, by the use of wetlands. To minimise future impact on the water environment, the Agency would like to encourage the use of permanent grassland swards to maintain soil stabilisation.

The Agency is currently undertaking a National R&D project to identify the sources of silt, whether this comes from topsoil as a result in changes in land use or from bank erosion.

We are also concerned over the effects of sand on the fishery and on the whole ecology of the river. Some sand may occur naturally in the river but there is concern that land management activities can cause significant quantities of sand to enter the river. Although generally not thought to affect egg survival at low levels, large quantities can submerge weed, invertebrates and spawning gravels, causing damage to the ecology. We are currently investigating the possibility of prosecuting where activities cause these impacts. However, we prefer to work with farmers and land managers to prevent such damage from occurring.

Bodmin Moor Project

The Agency is a partner in this project, which seeks to promote conservation of wildlife and archaeological features with sustainable economic development on the farms of Bodmin Moor. We support the aims of the project particularly when changes in land use can bring about ecological benefit to river systems.

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.

Small Brook project

The Agency has been working together with local farmers investigating links between farming activity and deterioration in water quality through a study on the Small Brook, carried out over the last two years. The findings of the project show that most problems were of an intermittent and localised nature, generally as a result of poor waste management. The Agency produced an information leaflet with the assistance of local farmers and industry to raise awareness and promote the findings of the water quality study in the Small Brook catchment.

Forestry

The South West Forests Project aims to use forestry planting and management as a catalyst for positive land use changes, and stimulate other sectors of the rural economy through large scale planting. The project comes at a time of uncertainty and change in the long-established agricultural sector of the area. The Agency is keen to work with the project to ensure that proper consideration is given to the protection of existing habitats, particularly Culm grassland.

Table 4

Action	Lead Body	Cost (£)	Financial Year					Progress
			98	99	00	01	02	
Issue 1: Promotion of Soil Code, particularly in conjunction with changes of land use and crop patterns.								
1.1 Promote good practice through day to day work, to work towards RQO compliance.	MAFF, Agency	U	*	*	*	*	*	Ongoing promotion during farm visits.
Issue 2: Develop economic and environmentally sustainable farming								
2.1 Work with farmers and landowners, including part of the Bodmin Moor pilot project.	FWAG, Agency, MAFF, CCC, farmers, EN, WRCT	U		*	*	*		The Agency has been in regular contact with the project, providing information where needed.
2.2 Promote management schemes for wildlife stewardship to encourage positive management for Culm grassland and other important habitats.	FWAG, Agency, WCRT, EN, DWT, CWT	U		*	*	*	*	Ongoing support given.
Issue 3: Control of silt and diffuse pollution								
3.1 Carry out campaigns to solve problems of diffuse	Agency, FWAG, WCRT			*	*	*		Ditching leaflet produced. RLUG leaflet given out to Partnerships.

Action	Lead Body	Cost (£)	Financial Year					Progress
			98	99	00	01	02	
pollution by - Research - Producing guidelines - Raising awareness								
3.2 Advise on land management to prevent soil loss and pesticide runoff	Agency, FWAG, WCRT	U				*		Ongoing support given.
Issue 4: National research project into siltation of salmon redds and identifying the sources of silt.								
4.1 Following a trial of the methodology in the summer of 1999, a full-scale sediment trapping programme was initiated in January 2000 (following significant floods). Silt traps were located in key areas.	Agency, FWAG, WCRT	U		*	*	*		Results are being analysed at present.

4.3 Looking after wildlife and the historic environment

Biodiversity simply means variety of life. Conservation in its broad sense should be an integral part of all activities, and many of the issues and proposed actions within this document promote sustainable use of resources, or seek to make up for serious losses or impacts. A more targeted approach of specific conservation actions is being developed through the Devon Biodiversity Partnership, the Cornwall Biodiversity Initiative, the Dartmoor Biodiversity Action Plan and through English Nature's 'Natural Areas' Initiative.

In today's landscape, rivers and wetlands provide refuge for many important communities and species. Key habitats and species have been identified for protection and Biodiversity Action Plans (BAPs) will provide a framework for our targets in nature conservation.

River Habitat Survey

In order to operate effectively organisations such as the Agency, who are involved in the protection and management of rivers, need to characterise and classify the physical structure of rivers.

The quality of river habitat at a site is assessed by comparison with other similar sites, using criteria derived from known conservation value and from the occurrence of special features. This assessment is based on physical characteristics of the river channel and corridor features that are known to be of value to wildlife.

Two scores are assigned to each site, Habitat Quality Assessment (HQA) score and Habitat Modification Score (HMS). The HQA score increases with the rise of known wildlife interest such as exposed tree roots as potential otter holt sites and broad-leaved woodland. The HMS score increases with increasing proportions of modification features.

Results from the survey indicate that rivers in the area have Habitat Modification Scores that fall within the 'predominantly unmodified' category. This score indicates that there was occasional evidence of bank or channel modification in the plan area. Poaching of riverbanks by livestock through inappropriate management was significant, occurring in 40 per cent of the sites. A number of current projects aim to reduce this problem (TAMAR 2000, Fisheries fencing projects, Bodmin Moor Project, Countryside Stewardship Schemes etc). Other significant impacts on the 52 sites were road bridges - present at 23 per cent of sites, outfalls at 12 per cent of sites and weirs present at 10 per cent of sites.

Rivers in the area scored a HQA of ***50*** which is an average score when compared to similar river types in the national baseline survey. The surveys suggest that the area has extensively wooded river corridors and associated wildlife. Additional special features were braided channels, debris dams in the channel and the occurrence of bog, marsh and flush habitats.

The survey has also given the Agency a clearer picture of the physical condition of the rivers. It is hoped that this information will be used to quantify habitat quality and help relevant bodies target future conservation actions.

Habitat and species loss

By analysis of digitised land cover data, as well as the more traditional monitoring techniques such as carrying out field surveys, the causes of habitat and species loss can be assessed.

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

Habitat Creation – managed retreat

We manage flood defence banks that protect agricultural land throughout the area. We are keen to hear from landowners that would be interested in exploring the potential for recreating wetlands, on areas currently protected by floodwalls.

Table 5

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
Issue 1: Development and Delivery of Biodiversity Action Plans Please see Appendix 1								

4.3.1 Protecting wildlife and their habitats

Within the plan area the key species and habitats which are particularly relevant to the activities in which the Agency has an involvement are shown in Table A. The table also shows major threats, where known. The table only gives an indication of the key nature conservation features of the plan area. For a full description of habitats and species the full BAP documents should be consulted.

Where possible, we will consider the effects on these species and habitats when authorising our consents and licences.

Table A: Table of Key habitats and species

Key habitats	Species	Status	Threats
Boundary features e.g. Cornish hedges, ditches	Plants –ferns, lichens & mosses Small mammals - dormouse Reptiles – common lizard	National priority	Removal, neglect, poor management
Culm Grassland (Rhôs pastures) e.g. Dunsdon Farm National Nature Reserve	Insects - marsh fritillary, Plants - whorled caroway, wavy leafed St Johns wort, bryophytes Birds - barn owl, curlew	Internationally important	Drainage, waste spreading, tipping, pond creation, neglect, ploughing
Freshwater Rivers/streams, ponds, watercourses, floodplains and fluvial processes	Mammals – otters, water voles Fish – salmon, bullheads, native brown trout, seatrout, lamprey, grayling Mollusc – freshwater mussel Plants – Cornish moneywort, lower plants Birds – dipper, kingfisher, sand martin Insects – dragonflies including Southern damselfly	Nationally and locally important	Nutrient enrichment from fertiliser runoff and sediment release from bank erosion, changes in land use, runoff, water abstraction
North Dartmoor Upland heathland, valley mire, blanket bog	Blanket bog, lower plants, invertebrates	Internationally important	Inappropriate grazing and burning regimes, drying out of moorland/blanket bog, acid deposition
Bodmin Moor	Typical moorland species including golden plover	Nationally important	Recreation, stocking levels

Important species

We carried out surveys during summer 1999 on the Rivers Tavy and Lynher for rare species including otters, water voles and rare fish. The results are currently being analysed.

Otters have returned to the area in significant numbers, following their major decline in the 1960s and 1970s. Maintaining this recovery is now a priority. We have part-funded project officers who will promote otter conservation in Devon and Cornwall

Water voles have suffered a sharp decline nationally over recent decades. How many live in the area is uncertain, but there appears to be areas of suitable habitat, or areas where such habitat might be suitable if improved. Plans for this species are well developed both locally and nationally and we will adopt the recommendations. In June 2000 Cornwall Wildlife Trust started a water vole survey. A key area targeted is the Bude Canal.

Sand martins and kingfishers are vulnerable to loss of their nest sites as a result of erosion control works to rivers, as well as adverse conditions either here or in wintering areas. Concern has been expressed at changes in the population and we need to monitor this with the help of other organisations. We will ensure all known nest sites are protected during our own work or when authorising the actions of others and will encourage riparian owners not to put in place bank protection structures which reduce the extent of suitable nesting habitats for these species.

Invasive Species

The Japanese Knotweed Control Forum for Cornwall continues to meet on a regular basis. Research is continuing with regards to good practice for the use of herbicides. The web site has generated a lot of interest, and has stimulated knotweed control programmes throughout the UK. Our understanding of knotweed control and management is continually changing, and therefore the web site provides an ideal medium for providing information.

The Geographical Information System survey, sponsored by the Agency has provided a good understanding of knotweed distribution throughout Cornwall. Maps are now available from the Planning Department at Cornwall County Council. There are at least 2800 known sites of knotweed in Cornwall. Continued recording is greatly welcomed and forms are available from your local Agency office.

The first phase of the Japanese Knotweed biological control research programme has started. Scientists will be collecting potential biocontrol agents, such as beetles and fungi, from the native range of knotweed during summer 2000. The organisms will be kept in strict quarantine in the UK for initial host specificity testing. If funding can be found for phase two, this testing will be extended. If not, the organisms will be destroyed. Host specificity testing involves exposing all UK native plants related to knotweed, and UK crop species, to the potential biocontrol agents. If the organisms attack native species or crops, they are no longer included within the research programme. The research should hopefully identify at least two organisms that can survive in the UK that are specific to Japanese Knotweed. The decision on whether to release the organisms will reside with the Government.

Giant Hogweed has established itself along parts of the Tamar Estuary, and a survey has shown population levels that causes concern. We are currently

preparing a partnership project with other bodies and landowners to help eradication.

Triangular Clubrush
Triangular Clubrush is a perennial species that grows on mud-banks along the lower reaches of tidal rivers. The original population presently occurs at only one location in the UK on the Tamar estuary. It is therefore classified as *'Critically Endangered'* and it has statutory protection. The Agency is working with other partners to help ensure that the population is protected and enhanced.

In a collaborative project with English Nature and Kew gardens we have supplemented the population at suitable sites. We will continue to assess the suitability of reintroducing the plant to its former range. The results of these studies will be used for the future management of the Tamar population. Monitoring the success of introduced plants and continued studies into the ecological requirements of this species will be undertaken throughout this year.

Culm grassland
Culm grassland (Rhôs pasture) is a wet grassland habitat rich in rare species of flora and fauna including the marsh fritillary butterfly, which is a key species identified in Biodiversity Action Plans. Culm is found only in North Cornwall and North Devon and has become scarcer as farmland has been drained and otherwise used more intensively. An inventory of Culm grassland has been completed for the Culm Measures Biodiversity Action Plan. It identifies and lists the total remaining area of this habitat. The majority of the remaining area is currently protected through environmental management schemes such as the Countryside Stewardship Scheme, under which Culm Grassland is a key target for Devon and Cornwall.

Wetland habitats can be recreated and can form a thriving community of wildlife within a few years. In conjunction with our partners in the county Biodiversity Initiatives we are supportive of planned study to identify sites where Culm re-creation could be successful. We are currently evaluating the need and timing of a training day for planners and developers on the potential of inclusion of wetland habitats in new developments.

We work in partnership with organisations such as English Nature and FWAG to advise landowners on management of important Culm areas.

Partnership schemes
Schemes exist to encourage appropriate management of biologically rich habitat. Countryside Stewardship, administered by MAFF, various SSSI Management Agreements agreed with English Nature, as well as positive advice on habitat issues by the Agency, FWAG, CWT and others help to ensure conservation of this natural resource.

Dartmoor Biodiversity Project
This project was set up with the primary aim of carrying out practical work to support key wildlife habitats and species within the catchment area of the River Dart, by working with farmers, landowners and community groups. The Dart Biodiversity Project is a three-year project and is funded by the European Agricultural Guidance Fund, Dartmoor National Park Authority, English Nature,

the Environment Agency and the Duchy of Cornwall. This project has been extended across the National Park including the River Tavy.
The project aims are focused upon:

- On-farm advice and practical assistance for farmers and landowners within the catchment area
- Linking existing projects, to maximise benefits for wildlife by building on work already carried out
- Providing advice and support for educational and community work
- Raising awareness of biodiversity
- Identifying and implementing practical work on a catchment basis

A newsletter has been produced by the project and is available from the National Park Authority Head Offices or by visiting the website at www.dartmoor-npa.gov.uk

Table 6

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
Issue 1: Management of Culm grassland								
1.1 Produce management plan on Culm grassland including species such as marsh fritillary	CWT, DWT, Agency	U			*			The plan has been written and published. Action complete.
1.2 Regular monitoring of key sites	CWT, DWT	U			*	*	*	This is ongoing as part of core work.
1.3 Map extent of existing Culm grassland and identify sites for restoration	Agency, DWT, CWT, Plymouth Uni	U			*			Mapping has been completed. A PhD project is underway into identifying sites suitable for restoration.
1.4 Provide advice on the management of watercourses to protect wetland including Culm	Agency	U			*	*	*	Ongoing as part of core work.
Issue 2: Recreate wetland habitat (including reedbeds) where appropriate								
2.1 Identify potential small sites (<20ha)	Agency / BAP partners/EN/NT	U		*	*			A feasibility study into the potential of reedbeds has been completed.
2.2 Organise training day for planners/developers on potential of wetland habitats	Agency / BAP partners							Due to lack of resources this action has not been progressed this year.

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
Issue 3: Carry out River Habitat Survey								
3.1 Continue to survey the rivers to assist in the management and enhancement of the area.	Agency	U		*	*	*	*	Ongoing as part of core work. The Agency is training staff in RHS.
3.2 Identify sites and carry out stream habitat improvements from RHS	Agency	20k			*			There is a need to carry out more RHS before this can be undertaken
Issue 4: Controlling invasive species								
4.1 Assess extent and impact on Agency owned land and draw up appropriate programmes for treatment according to Agency policy and R&D.	Agency	U	*	*	*	*	*	Ongoing
4.2 Project to control Giant hogweed in the catchment.	Agency / EN Land-owners /LPAs	<10k			*	*		Some funds available this year - will be starting work in February 2001 (season of control)
4.3 Assess extent and impact of other species throughout the area and encourage riparian owners to take appropriate action.	Agency / EN/ Wildlife Trusts/ LPAs/ Land-owners	<10k						Tamar included in Cornwall Area wide knotweed initiative

Protecting the historic environment

The area contains many sites and features of historic and archaeological interest. Although there is a wealth of information from a wide range of sources on the archaeological and historic value of the area, it is not always in a useable format.

Table 7

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
Issue 1: The need for archaeological assessments								
1.1 Undertake Assessment of water related resource.	Archaeo-logical bodies	U	*					Review complete 1998. Further actions developing through TECF (of which the Agency is a member).

Habitats and species

The EU Birds Directive and the EU Habitats Directive place additional responsibilities on all competent authorities, including the Agency. The aim of the legislation is to protect and conserve certain species and habitats that are threatened in a European context.

The first stage of achieving this is through the establishment of a network of nature conservation sites that will be known as the Natura 2000 Network. Natura 2000 sites are Special Protection Areas (SPAs) which are designated under the Birds Directive, and Special Areas of Conservation (SACs) which are designated under the Habitats Directive.

As a result of European Union concerns over the original SAC list the 'kilkee' moderation exercise was undertaken. This involved the list of UK SACs being reviewed and existing sites being redesigned with either longer lists of interested features or extended boundaries. Further to this, new sites were proposed. These changes have obviously affected the Agency's review programme. English Nature and the Agency are currently developing a revised review programme to take account of these changes. However, Stage 1 for the SACs and SPAs has been completed, as has a major water quality investigation to support Stage 2.

There are four areas designated as Special Areas of Conservation (SACs) under the EC Habitats and Species Directive 92/43/EEC (1992) in the plan area.

Area	Feature
Culm grasslands	Molinia meadows on chalk and clay (Eu-Molinion), Northern Atlantic wet heaths with Erica tetralix, marsh fritillary.
Dartmoor	Blanket bog (active only), old oak woods with Ilex and Blechnum, Dry Heaths, Southern Damselfly, Salmon, Otter
South Hams	Vegetated Sea Cliffs, submerged or partly submerged sea caves, Titlio-Acerion ravine forests, semi-natural dry grasslands and scrubland facies, dry heaths, greater horseshoe bat.
Tamar Estuaries Complex/Plymouth Sound & Estuaries	Atlantic salt meadows, estuaries, large shallow inlets and bays, mudflats and sandflats not covered by seawater all the time, Shore Dock, Avocet, Little Egret

Special Areas of Conservation (SAC) and Special Protection Areas (SPA)
The Tamar Estuaries Complex SAC/SPA management plan will sit within the framework of the existing estuary management structures, namely the Tamar Estuaries Consultative Forum (TECF), Yealm Estuary Forum and Wembury Voluntary Marine Conservation Area. The estuary management plans and links to other plans, particularly this LEAP and the updating of the Oil Contingency Plan for the area have provided a very valuable start to the process. Their collaborative approach and consultative nature identifies key issues and concerns and therefore provides a firm basis from which to go on to develop conservation objectives and a 'scheme of management'.

The Plymouth Sound and Estuaries Nature Conservation Review has been completed. This identifies key features within the estuary providing baseline information that will be used to help prioritise and direct future work in the area. TECF will continue to maintain and update the biological databases and identify additional research and monitoring requirements concerning inter, subtidal and adjacent habitats - including species identified within the Nature Conservation Review.

Table 8

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
Issue 1: Identifying key requirements for Special Areas of Conservation (SAC) and Special Protection Areas (SPA)								
1.1 Review of consents, licences and operations against conservation objectives	Agency	U						Identification of all authorisations (consents, abstractions and waste licences) planned. This has been delayed due to revision of the site proposal list.
1.2 Follow up fieldwork as identified by Conservation objectives for the SACs.	Agency	4k						

4.4 Fisheries management

Natural fisheries are important ecological assets and are also of commercial value for angling and netting. Fish are good indicators of the overall health of our rivers. We use information from our routine fish population surveys, fish counters and fishing catch returns to assess the diversity, abundance and health of fish populations. The Agency is currently developing a national fisheries classification scheme that will enable us to define the status of fish stocks recorded from each river system within a national context.

The Rivers Tamar, Tavy, Lynher, Plym and Yealm support important fisheries for Atlantic salmon, sea trout and brown trout throughout their freshwater length. In addition bullheads, brook lamprey, grayling, sea lamprey, eels and shad are present and important for their conservation value. The Tamar, Tavy and Lynher Estuaries have historically supported one of the most productive migratory salmonid net fisheries in the South West.

Salmon Action Plans are being developed for all major salmon rivers in England and Wales with the following aims: safeguarding salmon stocks, maximising economic/social benefits, and ensuring long term improvements. Each Plan will: describe the fishery and how it is performing; identify the key issues in each river system; set fishery targets and fishing effort controls and outline a programme of improvement.

Improving Spawning Gravels

Two areas of concern have been identified that could account for lower than expected salmonid production, lack of suitable spawning gravels and the siltation of existing gravel. Although it is not possible to be specific, it is strongly felt that changes to agricultural land use, particularly in headwater areas has contributed significantly to gravel siltation, low hatching and survival rates for salmon.

Assessment and prioritisation of sites that could benefit from remedial work is underway via simple land use mapping. Completion of actions will be dependent upon funding. Continued monitoring of areas of improvement will take place through the routine fish survey and habitat assessment. Spawning gravel improvement work has previously been carried out on the Rivers Yealm and Lynher. Further significant gravel rehabilitation work was again undertaken on the River Lynher in 1999 and 2000 following collaboration between the Agency and riparian fishing interests.

Construction of instream structures (croys)

Fishery managers and angling clubs often seek to create deeper pools for salmon and sea trout in order to improve angling amenity. This is often by the placing of short lines of rocks in the channel. These rocks are known as croys or deflectors.

In some cases, croys, which are placed incorrectly, can lead to increased bank erosion and sedimentation. To ensure that this does not occur it is a requirement to contact the Agency prior to installation. In this way the Agency and riparian owners work together to ensure that any instream structures are suitable, sustainable and placed correctly.

A national river restoration strategy is currently being developed by the Agency that will include a national standard for assessing croy proposals.

Table 9

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
Issue 1: Insufficient age class data for adult salmon and sea trout particularly on the Rivers Plym Yealm, and Lynher								
1.1 Further scale reading to investigate adult population trends in stock abundance.	Agency Anglers	On-going	*	*	*	*		A scale return pack was sent to River Plym anglers in 1998. A further study is planned for the River Yealm in 2001 to coincide with the River Yealm SAP consultation document.
Issue 2: Improve spawning gravels								
2.1 Import spawning gravel at: Below Burrator dam and River Tavy from Tavy Cleave to Coffin Wood.	Agency	50k						Not a priority and no resources are available at present.
2.2 Investigate need for remediation work on Plym, Yealm and Lynher, including weed at Trewint works.	Agency	2k	*	*	*	*		Work was carried out in 1998 and 1999 with angling association and continued in 2000.
2.3 Assess the current status of siltation of Deans Brook salmon spawning gravels	Agency	U		*				We are undertaking habitat improvement work that will aim to address the problem of siltation. Siltation within the Deans Brook will be assessed using silt traps as part of the national R&D project concerned with sedimentation of salmonid spawning gravels.
Issue 3: Construction and location of instream structures								
3.1 National policy guidance on river restoration	Agency	U			*	*	*	A national policy on river restoration is currently being developed.

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
Issue 4: Obstructions to fish migration requiring improvement or maintenance								
4.1 Complete survey of manmade obstructions/ weirs.	Agency	10k		*				A number of weirs were surveyed in 1998. No funding is available for further work to be undertaken at present.
4.2 Detailed site appraisal and design of fish passes or by-pass channels.	Agency	2k/ site						
4.3 Maintain River Tavy weirs.	Owners	U						
Issue 5: Loss of salmonids at abstraction points								
5.1 Assessment of impact at Ditsworthy Warren Leat.	Agency	10k		*				A report detailing the results of the 1999 smolt trapping study is now available. Further work has been undertaken in 2000. Negotiations are in progress with the leat operator to screen the leat to minimise smolt losses. (See also Section 4.7.1)
5.2 Assessment of smolt mortality at abstraction points on River Lynher.	Agency	10k						No resources currently available to achieve this.
Issue 6: Assessment of siltation on Salmonid spawning grounds								
6.1 National R&D project into the effects of siltation on salmonid spawning grounds is underway.	Agency	U						Phase 1 of the project was undertaken during the summer of 1999, analysis is now taking place. Additional silt traps were placed in salmon spawning areas during December 1999.

Status of fish stocks
Most of the area's rivers support good quality fisheries although there is concern over a national decline in salmon stocks. We will work with local fisheries associations to investigate the current status of stocks. Our core work includes a programme of fish surveys throughout the rivers in combination with an assessment of rod catches on key fisheries.

The experimental hydro-acoustic fish counter on the River Tavy is now in operation and is under validation. The Agency is currently investigating the possibility of a fish counter on the River Plym. In addition, a scoping study is in progress to identify the potential for a fish counter on the River Lynher

Analysis of fishery survey data has shown a lower than expected number of salmon parr on the River Lynher compared to other rivers in the South West. The reason is unknown but may be associated with the chronic impact of historic metalliferous mining activities on tributaries of the River Lynher. As a result of historic mining activities the Darleyford Stream and Marke Valley Stream are currently not capable of sustaining populations of fish owing to their contamination with metalliferous mine wastes. An investigation has been initiated to assess the potential of these and other tributaries for undertaking potential remediation measures.

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

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

Independent scientific advice provided to NASCO (North Atlantic Salmon Conservation Organisation) relating to international salmon stocks, has emphasised the decline of spring fish (larger, older salmon which enter the rivers early in the year). Reasons for the reported decline are unclear but it is believed that changes in ocean currents and temperatures may be a contributory factor influencing the marine survival of salmon post-smolts.

As a result of the findings, a recommendation was made to reduce salmon exploitation. The countries which form the NASCO alliance, including the European Union, reduced quotas in salmon sea fisheries around Greenland and the Faroe Islands and sought to also introduce further measures to protect salmon in home waters and rivers.

Following significant public consultation with all interested parties, the Minister confirmed that new bylaws for salmon for England and Wales would take effect on 15th April 1999. A full list of byelaws can be obtained from any local Agency Office. However, those, which have particular relevance for the Tamar Estuary and tributaries, are as follows:

a) A delay in licensed salmon netting until the 1st June each year
b) All salmon caught on rod and line before 16th June must be returned alive with minimum injury (catch & release)
c) Angling for salmon before 16th June can only be undertaken using an artificial fly or artificial lure.

Agency fishery surveys and fish counter data indicate that there has been a decline in salmon returning to the River Tamar in line with national findings. In addition to the limiting factors at sea that are a cause for concern, the River Tamar and tributaries also have specific problems with freshwater. These include land use changes that have resulted in the causing siltation of spawning areas; water quality and water resource impacts that need to be addressed. Many problems are area wide and as such can only be tackled on a partnership basis. The Agency strives to build partnerships wherever possible. It is hoped that these approaches will both educate and resolve some of the factors affecting salmon and sea trout.

Natural fisheries are important ecological assets and are also of commercial value for angling and netting. Fish are good indicators of the overall health of our rivers. We use information from our routine fishery surveys; fish counters and fishing catch returns to assess the diversity, abundance and health of fish populations. We are currently involved in implementing a classification scheme following a research and development project that will enable us to set targets for the river system and also to enable the fisheries to be described as a national context.

Salmon Egg Box Programme

In order to help salmon eggs to overcome the problems of siltation in the headwater streams of the Tamar catchment, the Agency in combination with a number of river associations have initiated a trial salmon egg box programme. In simple terms, an egg box is a small stand alone unit which increases salmon egg hatch rates by preventing silt ingress. Early trials revealed a fry emergence rate of 88 per cent which is significantly higher than natural egg hatching rates in some of the silt affected headwater sites. Once emerged, the fry are released to sites where the available habitat and water quality has been assessed to be optimal. The work is being undertaken in a true partnership approach between the Agency, TTFA and WRT. This measure is only envisaged as short term assistance to sustain salmon populations whilst the silt problems are addressed. The long term objective is to strengthen salmon populations naturally through improved spawning, nursery habitat and effective sediment control.

Habitat Improvement

On rivers such as the Lynher, smaller scale habitat works are being investigated to maximise the cover and refuge areas provided for juvenile salmon and sea trout. Sites in the upper reaches are being assessed for the installation of natural woody materials that can be attached to the riverbank at water level in order to

increase fish refuge areas and hopefully, improve the river's ability to hold greater densities of fry. Identification of suitable sites is the first part of the process along with the sourcing of suitable materials like hazel facines.

Endangered fish species

Shad are a national biodiversity priority species. The shad project initiated in 1998 confirmed that Allis Shad, the rarest of the British Shad species, occurs within the Tamar Estuary. The Agency's shad project officer worked closely with anglers, netsmen, the Pymouth Marine Aquarium and the Marine Biological Association to promote research into shad and other rare fish in the area. A number of shad were caught (as a by-catch) in the upper reaches of the estuary by the salmon netsmen. Further momentum was given to the project following the capture of a female Allis Shad that showed signs of recent spawning activity. In 1999, an adult male Allis Shad was caught by an angler in freshwater above Gunnislake weir. In addition, validation work undertaken on the fish counter at Gunnislake in August recorded a shad migrating back out to sea. This provided further evidence of a breeding population within the River Tamar.

A Research and Development (R+D) study to determine the distribution of shad in the South West Region was initiated in December 1999. This will seek to map the known location of shad within the region and assist in providing information on the shad within the UK. The survey will also seek to obtain information on other rare fish such as smelt and sea lamprey. All information gathered will be shared with our partners in this project, MAFF, English Nature, the Marine Biological Association and the new National Marine Aquarium.

Assessment of siltation on salmonid spawning grounds.

A national research and development programme investigating the extent of siltation within silt trap salmonid spawning gravels is taking place. The first phase of this study was undertaken in 1999 and aimed to assess the applicability of the methodology. A comprehensive programme will be undertaken in the winter of 2000/2001 to assess the severity of siltation on all salmon rivers throughout Cornwall Area. The project will also be involved in "finger printing" silt in an attempt to identify the relative importance of different sources of silt within each river catchment.

Historical evidence indicates that Deans Brook, a tributary of the River Lynher, once supported good sea trout and salmon spawning. However, changes in land use have resulted in siltation, which may have reduced the stream's ability to sustain migratory salmonid spawning

Natural predation

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

Introduction of non-native species
Within the plan area there are lakes containing a variety of fish species not found within the river system. We are concerned about the occurrence and impact of fish escapees on native species. Serious diseases can be spread to wild populations through the introduction of non-native species and predation by alien species can cause damage to the existing fishery. We are currently running a leaflet campaign that provides advice on the stocking of fish.

Tamar Lakes
See specific section for discussion on the effects of the Tamar Lakes on the upper Tamar system including the fishery.

Changes in populations of brown trout
There has been concern expressed over a perceived lack of brown trout in the Rivers Ottery and Lyd. The Agency intends to produce a trout strategy, which will assist in the management of these stocks.

Table 10

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
Issue 1: Maximise fish habitats								
1.1 Maximise habitats including: reducing silt inputs, fencing project, cleaning of spawning gravels, assessing effectiveness of gravel rehabilitation	Agency /WCRT, riparian owners	U		*	*			Number of projects progressed particularly in fencing to create buffer strips.
Issue 2: Salmon Action Plan								
2.1 Refine target levels for the salmonid fishery population as recommended in the Target Setting	Agency	U			*	*		Will be defined as National information becomes available.
Issue 3: Impact of stocking Trout								
3.1 Investigate effect of stocking trout on native salmonids through an Agency Research and Development project.	Agency							No national resources are available for this project.
Issue 4: Low juvenile Salmonid populations								
4.1 Investigate causes of low juvenile populations where they exist. This will	Agency	U						Resources have been targeted at River Lynher tributaries.

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
include assessing the effects of water quality, water resources and predation.								
Issue 5: Instream obstructions								
5.1 Promote appropriate removal of where a significant blockage to migratory fish.	Agency /WCRT/ riparian owners							Ongoing
Issue 6: 'Buyer Beware' principle for fish stocking								
6.1 Promote principle by distributing leaflets and advising customers.	Agency	U			*			Leaflets sent to all fisheries and customers advised upon application for consents.
Issue 7: Rod catches lower than expectations on the Rivers Tavy, Plym, Lynher and Yealm								
7.1 Investigate whether this is due to reduced salmon numbers.	Agency	100k	*	*	*	*	*	We are currently attempting to develop automatic processing to the acoustic counter data. An R + D report discussing the development of hydro-acoustic fish counters in England and Wales, including the counter on the Tavy will be published in June 2000.
7.2 Salmon Action Plans to be produced: Plym 2001 Yealm 2001 Tavy 2000 Lynher. 1998	Agency	U	*	*	*	*		Lynher final plan completed. Tavy consultation and final plan completed.
7.3 River Tavy - prevention of potential over-exploitation of salmon by licensed netting.	Agency	U					*	A submission will be made to MAFF recommending options for reducing exploitation. National measures to protect spring salmon are now in place.

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
7.4 Investigate possible byelaws to increase escapement of multi sea winter fish.	Agency	U		*			*	We will continue to assess the effectiveness of this bylaw and any other factors that may affect Multi Sea Winter Salmon stocks.
Issue 8: Protection of endangered fish species and their spawning habitat								
8.1 Recommend appropriate action to netsmen for protected and nationally rare fish species.	Agency	2k	*	*	*	*	*	Migratory Shad observed and caught upstream in River Tamar. Research continues. Allis Shad, the rarest of the two British species have been recorded.
8.2 Further study, monitoring recording of these species.	DSFC/ EN/ MAFF/ Agency	U		*				A preliminary study of shad species in the Tamar Estuary complex has been undertaken. The report is now available. A new Shad project officer was appointed in December 1999 and has already made significant progress in identifying the presence of Shad species in the South West region's rivers.

4.4.2 Enforcement

Fisheries Enforcement

Salmon and sea trout are protected by extensive fisheries legislation mainly contained within the Salmon Act 1986, Salmon & Freshwater Fisheries Act 1975 and Regional and National Fisheries Byelaws.

These laws were created to protect freshwater fish from uncontrolled exploitation and the Agency enforces the legislation through its Fisheries Enforcement Officers.

In the Tamar Estuary and tributaries, illegal exploitation of salmon and sea trout occurs both in coastal waters and main river tributaries. The use of certain nets within areas of the Tamar Estuary and adjacent coastline is prohibited as they interfere with salmon and sea trout trying to get into the river to spawn. The Agency operates a high-speed patrol boat in the estuary specifically to seize these illegal nets. Without this boat it is likely that significant numbers of salmon would be removed illegally before they had a chance to enter the main river. Within the estuary, the Agency enforcement team works in partnership with the

Ministry of Defence, Ministry of Agriculture Fisheries and Food and Devon Sea Fisheries Committee. In this way, more parties promote the free flow of information on illegal activities.

In the main river tributaries, poaching of salmon and sea trout is still a problem. This activity often happens at night, and in many cases by lone individuals. Fisheries Enforcement Officers undertake many night patrols using night sights to enable them to 'see in the dark'. November to January is an important time for the Agency as salmon and sea trout have moved into shallow waters to spawn, making them an easy target for poachers. At this time of year, Agency patrols are increased particularly at susceptible sites. In 1999, the enforcement team trialled new mobile infrared detection systems to detect poachers at remote locations. Additionally, a scheme called 'Operation Eyes and Ears' has been set up to increase the free flow of information about poaching from any persons having an interest in the river and its fish.

Of less glamour, but of equivalent importance is the routine enforcement of rod licences also carried out by Fisheries Enforcement Officers. All anglers must have a rod licence to fish for freshwater fish. The income derived from licence revenue helps to fund the Fisheries service and therefore the Agency prosecutes persons who are fishing without a valid licence. In 2000, further surveillance equipment will be tested including the use of mobile, real-time recording camera units.

The number of migratory salmonids entering the rivers is linked to the level of salmonid poaching with gill nets in the estuaries and adjacent coastal waters. Prior to the 1980s, large numbers of unlicensed nets were legally operated in the estuaries and along the coast ostensibly for the capture of sea fish. Changes in legislation have resulted in the creation of areas closed to netting, which, combined with the current level of enforcement has significantly reduced illegal captures in tidal waters. Rigorous and high profile enforcement continues as a joint initiative between the Agency, MoD, MAFF and DSFC. Rod licence income is essential for maintaining the protection of rivers and fish stocks. We will continue to run campaigns to publicise the need for rod licences and will enforce any breach of the rules.

Table 11

Action	**Lead Body**	**Cost (£)**	**Financial years**					**Progress**
			98	**99**	**00**	**01**	**02**	
Issue 1: Maximise use of resources to prevent poaching, including collaborative work with other parties								
1.1 Continue to patrol Tamar and associated estuaries by boat to detect illegal nets	Agency /MAFF/ MoD/ DSF	U		*	*	*	*	Extent of patrols will be funding and workload priority dependent.
1.2 Maintain cross authority network to maximise information flow at minimum cost.	Agency / MAFF/ MoD/ DSF							

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
1.3 Continue to undertake inspections at premises where poached fish may be sold and enforce the relevant legislation.	Agency							Extent of inspections will be funding and workload priority dependent.
1.4 Seek to extend the effectiveness of freshwater ant-poaching patrols by linking up with other interested parties	Agency / riparian owners / fishing clubs etc							Extent of patrols will be funding and workload priority dependent.
Issue 2: Operation "Eyes & Ears"								
2.1 Operation "Eyes & Ears" to promote free-flow of information on poaching from general public.	Agency	U						Launched in Nov/Dec 1999
Issue 3: Advanced technology deployment to detect poaching activity								
3.1 Trialling of infra-red detection units to assist anti-poaching patrols	Agency	U						Trialled in Nov/Dec 1999 Jan 2000

4.5 Shellfisheries

4.5.1 Shellfish Directive

Designation of Shellfish Waters Sites

The Shellfish Waters Directive sets standards to protect shellfish from the discharge of polluting substances and includes a guideline standard for bacteria in shellfish flesh, which is included to protect public health. Following a consultation exercise by the Department of Environment, Transport and the Regions (DETR) on whether waters (including sites on the Yealm, Tamar and Lynher - see maps included) should be designated under this Directive, the Government announced on 8th July 1999 a revision of designated EC Shellfish Waters. It should be noted, however, that the Agency is not the responsible body in relation to the quality of neither the shellfish nor any health consequences.

The Agency is responsible for controlling discharges to ensure the requirements of the Directive are achieved. This action by the government ensures that the Shellfish Hygiene Directive and the Shellfish Water Directive are now running in

parallel and their aims of consumer protection and environmental protection will now complement and reinforce each other. For additional information on the Shellfish Waters and Shellfish Hygiene Directives, please see Appendix 3.

4.5.2 Cockles

The Agency is not the Sea Fisheries Authority in this LEAP area and so has no jurisdiction over cockle harvesting in these estuaries. The relevant body is Devon Sea Fisheries Committee.

4.6 Water based recreation

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

The Agency supports the holistic management of the system for recreation. Within the Tamar River catchment the Agency is a member of the Tamar Estuaries Consultative Forum. A description of the forum's duties and members is discussed within the Protection through Partnership section of this LEAP Review.

Much of the area has a high level of water-related recreational use. The estuarine and coastal sections provide the major focus for water-based recreation. The Agency owns a substantial area of River Tamar fundus (the channel bed below high water mark) in the Calstock area, which provides a number of boat moorings. We are reviewing these sites to assess their potential for recreational activity. We will seek to maximise appropriate recreational opportunities on land under our control.

Access to rivers in the area is restricted to existing footpaths and other rights of way. We do not encourage new access routes or promote the use of particular rights of way without the support of landowners and countryside interests. However, we have a general duty to promote the recreational use of water in England and Wales and we will support sensitive access initiatives that respect the interests of local people.

The Tamar Trail

The Tamar Trail project has established a 30-mile trail through a designated Area of Outstanding Natural Beauty. This area includes the Tamar and Tavy estuaries, crossing the boundary twice as it passes through the broad-leaved woodlands. Also included on the trail are circular routes that allow visitors to explore some of the local villages. Environmental benefits include hedging, tree planting, orchard development and the production of farm conservation plans. The Tamar Valley Discovery Trail has been developed by a partnership between the Tamar Valley Countryside Service, Cornwall and Devon County Councils, district councils, the Countryside Agency and the Agency with assistance from many other sources.

Bridleways, footpaths and cycleways
The sustainable transport organisation SUSTRANS has developed a series of traffic-free routes across Britain. We are supportive of new routes where they can be managed without adverse effects on the environment or other users, and will assist where appropriate. The Agency provides advice on the appropriate use of walks alongside rivers and canals.

Some of the heavily used recreational sites in the freshwater system could be managed by initiatives by other bodies. We will support any such projects for sustainable recreation in the area.

Tamar Valley
Cornwall County Council has recently produced a strategy for former mining sites in parts of the Tamar Valley. The strategy includes assessing recreational potential at some sites.

Dartmoor National Park
Dartmoor National Park Authority has recently produced a guide for visitors to the park. The leaflet 'Caring for Dartmoor in a few easy steps' suggests ways in which visitors can help to conserve Dartmoor whilst still enjoying its natural beauty. The leaflet includes information about two current campaigns being run by the Authority. The first campaign 'Moor Care' has been developed to encourage visitors to drive carefully and to be prepared for unexpected obstructions such as livestock and slow moving agricultural vehicles. The second campaign 'Ban the Dam' is aimed at preventing the illegal damming of rivers. Last year the Authority cleared away over 60 dams in this area. Damming is often seen as great fun by young children but can cause irreparable damage. The campaign highlights what damage can occur when unofficial dams are built. The new leaflet is available from Dartmoor National Park Authority Information Centres or by visiting the website at www.dartmoor-npa.gov.uk.

Public access to the waterfront
The Agency as part of TECF will be reviewing the Port of Plymouth Area Recreation Study. The review will amend and highlight new recommendations in the area. This study will also review the policy proposals relating to the types of activity considered suitable. Within this research TECF will identify any new areas where improvements to disabled access is required.

Table 11

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
Issue 1: Meeting recreational requirements								
1.1 Support the development and implementation of issues in the Tamar Estuaries Management Plan.	Agency	On-going	*	*	*	*	*	Interpretation boards are to be placed on all public slipways on the Tamar estuary.

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
Issue 2: Promote sustainable methods of managing recreation								
2.1 Consider appropriate measures to limit damage to wildlife through recreational activity such as educational campaigns	Agency/ BAP Initiative	U	*	*	*	*	*	Ongoing
Issue 3: NEW ACTION Access to the waterfront								
Review the Port of Plymouth Area Recreation Study	TECF	U				*	*	

Bude Canal

North Cornwall District Council has funded a feasibility study to look at the options for the restoration of features of the Bude Canal. The Agency is keen to have early input into these proposals to ensure that the environmental implications are fully taken into account, such as any impact on wildlife that increased access to the canal may cause.

Bude Canal at present has been largely abandoned, restoration of it would provide a very historic, educational facility. North Cornwall District Council considers that its restoration could act as a boost to the economic regeneration of the area. Phase II of the feasibility study is currently underway, with the appointment of consultants to undertake the project.

Canals provide the optimal habitat for water voles. The results of the current water voles survey must be taken into account when planning future actions.

Table 12

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
Issue 1: Restoration of Bude Canal								
Carry out study and consider proposals.	NCDC	On-going	*	*	*	*	*	The Agency, along with other interested bodies, was consulted on the study.

4.6.2 Canoeing

Formally agreed access agreements exist on the Plym, Tamar and Lynher within this plan area. It is essential that the Access Officer from the British Canoe Union is contacted before canoeing these stretches, as numbers and times of year are limited.

In addition, there is demand for canoeing on other rivers, such as the Tavy, Yealm and Walkham. These rivers are canoed at times, but there is no Access agreement in place. It is possible that conflicts may occur with landowner and fisheries interests, the Agency would be willing to act as a broker between the relevant parties to try to achieve an agreement on the way forward. It is our view that a proper agreement will enable a degree of control of the demand. With no agreement in place there are still likely to be unconsented visits by canoeists.

4.7 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 (rivers, lakes 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 look at how water is used 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 compare future demands for water with water availability, and consider how to balance the two in an environmentally sustainable manner. To achieve this we work closely with the water companies and require them to submit detailed Water Resource Plans.

As a result of the last drought the Secretary of State tasked the water companies with providing drought contingency plans. The Agency issued National Guidance during 1999 and the South West Water's first drought contingency plan was received in April 2000.

Meeting Current Demand

To manage water resources, the Agency issue abstraction licences for specific volumes of water from identified sites for specific uses. The abstraction licence may include conditions to control abstraction where environmental damage is likely. 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 the Department of the Environment, Transport and the Regions (DETR). The full nature and impact of changes will not be confirmed until the legislation is approved by Parliament. We will need to implement any changes that arise from this process and amend licensing policies as appropriate.

Meeting Future Demand
Water resource planning is carried out over large geographic areas often extending over several LEAP boundaries. This makes it difficult to predict the precise impact of new development on water resources in the plan area. 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:

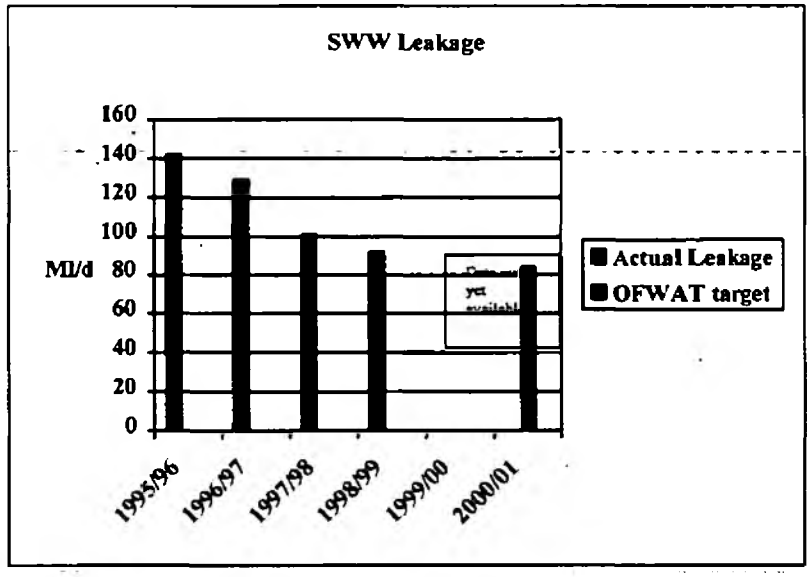
Encouraging people to use water more efficiently (**demand management**),
Increasing the efficient use of sources (**resource management**)
Reducing leakage towards an acceptable level (**distribution management**).

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. SWW has published a water efficiency plan, which contains strategies to deliver water savings by the customer. It 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. SWW has a free educational resource pack, *Running Water*, which provides National Curriculum support for 8 to 13 year olds.

Demand Management
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 (SWW) domestic customers have the option 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.

Resource Management
Water companies use areas known as Resource Zones in order to help manage the way in which they supply water. The LEAP area is within two Resource Zones: Roadford is fed primarily from Roadford Reservoir and supplies water to most of Devon and part of North East Cornwall; Colliford is fed primarily by Colliford Reservoir and supplies most of Cornwall. Both zones also use a number of other smaller sources.

Distribution Management
Extra resources can be obtained from making savings through reducing leakage. SWW's leakage figures are shown below.



What everyone can do to help

The average person receiving an unmeasured supply from SWW uses approximately 154 litres of water per day, or 56 cubic metres a year. Within the home there are many opportunities to help reduce this figure, for example . . .

- turn taps off, take showers rather than baths
- replace washers, repair leaks quickly
- use low flush toilets, or add a hippo to high flush toilets, use normal showers rather than power showers, make sure washing machines and dishwashers are full when you switch them on or use a water efficient machine
- save water for the garden in water butts, use trigger switches on hose pipe nozzles, plant drought resistant garden plants, mulch flower beds to retain moisture and restrict weed growth

Our workplaces offer many opportunities to reduce water use (and save money). Some of the measures outlined above may be suitable, together with process/site specific measures. Examples of these and other water efficiency measures are detailed in the document *Saving Water on the right tracks 2* which can be obtained from the Agency.

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 use of suitable systems, there is a need for water quality standards to be established. A series of fact sheets on water conservation measures is available from your Local Agency Office.

Operation of Roadford Reservoir

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

- Control curves based on reservoir storage to ensure conservation measures are brought in at key times.
- Measures to control releases to ensure they do not cause damage to the river environment downstream.
- Drought plans are now being finalised/or are available for these reservoirs.

Roadford Reservoir also has a fisheries water bank. The Agency consults with the Tamar and Tributaries Fisheries Association (TTFA) to decide how best to use this in the best interests of the fishery. As part of mitigation measures to compensate for the lack of salmon spawning on the River Wolf, SWW agree to buy back measures annually with netsmen in the Tamar Estuary.

Table 13

Action	**Lead Body**	**Cost (£)**	**Financial Year**					**Progress**
			98	99	00	01	02	
Issue 1: Operation and management of public water supply								
1.1 Develop drought contingency plans.	SWW	U			*			Drought plans have now been finalised.
Issue 2: Agree programme of use of the fisheries water bank at Roadford Reservoir								
2.1 Agree annual use of Roadford Reservoir Fish Bank	Agency / SWW, TTFA	U					*	Agency agrees action when needed.
Issue 3: Meeting future public water supply demand								
3.1 Encourage demand management and leakage control.	Agency / SWW	20k	*	*	*	*	*	We will encourage demand management and distribution management.
3.2 Prepare water resources plans in conjunction with SWW and publish a revised regional water resources development strategy.	Agency	19k	*	*	*	*		SWW's water resources plan was submitted in 1999 and accepted by the Agency. The plan will be reviewed on an annual basis.

Alleviation of Low Flow Schemes

Restoring Sustainable Abstraction Programme

The Agency has put together a catalogue of all the sites at which there is either a need to investigate whether abstractive impacts are causing problems for the environment, etc. or, where this is already known, a need to restore the situation to a sustainable one.

Sites include schemes previously labelled as "Alleviation of Low Flow Schemes" in rivers and ones where the impacts may affect wetland habitats. They include:

- Schemes which have already been identified within the Agency's National Environmental Programme (which include ones it expects water companies to investigate or resolve within their AMP3 period) and
- Sites listed within English Nature's September 1999 Report "water abstraction and Sites of Special Scientific Interest in England"
- Other sites including ones identified within LEAP documents where the Agency's Water Resources staff have endorsed that there is a perceived problem that abstractive impacts may be causing or significantly contributing to low flows.

Nationally, the Agency has over 500 sites at which investigations are needed or action is agreed to be necessary. It is therefore looking at how it should implement these investigations and any necessary solutions in a planned way within funding constraints and which must be given highest priority within the Agency's funding constraints. Sites of interest on this area are the River Tavy, River Meavy and Ditsworthy Warren Leat.

Table 14

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
Issue 1: Assessing effects of abstraction on salmonids in the River Tavy								
1.1 Complete validation of fish counter at Lopwell.	Agency	100k	*	*	*			The fisheries science team is currently investigating techniques to automatically process counter data.
1.2 Run fish counter at Lopwell.	Agency	as 1.1	*	*	*	*	*	A Research and Development report is to be published late 2000.
1.3 Modification of fish pass	Agency/ SWW	35k		*	*	*		Modification still to be agreed with SWW.
1.4 Complete Phase I PHABSIM to quantify impacts of abstractions on habitats available to juvenile salmonids.	Agency	30k		*				All time series modelling, using locally derived habitat suitability indices has been completed and final report is now available.

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
1.5 Complete Phase II habitat suitability indices.	Agency	50k	*	*				Report is now available.
1.6 Consider the individual and cumulative impact of the hydropower abstractions on the river environment, including salmonids and other issues to identify and agree changes.	Agency	U	*					Agency has started discussions with the abstractor.
Issue 2: Balancing flows between the River Tavy and other abstractions								
2.1 Measure impact of fish farm abstraction.	Agency	U			*			Measurement of fish farm abstraction commenced February 1999.
2.1 Discuss fish farm abstraction with owner	Agency/ Owner				*	*		Negotiations with abstractor ongoing.
Issue 3: Other potential low flow sites								
3.1 River Meavy (Burrator) Water releases to alleviate impact on fisheries.	Agency/ SWW	U			*			Pipework has been installed and three releases made. Assessment of benefit and exact timing of water releases is planned. Gauging station on R Plym opened Spring 2000, will help to monitor impact of flows on fish migration
3.2 Review impacts of reservoir operation on the fishery.	Agency	U	*	*				A report detailing the status of the fish population has been produced.
3.3 Review compensation flow from reservoir and if deemed necessary, consider variations of Burrator reservoir licence condition.	Agency/ SWW	U			*	*	*	Action dependent on the success of 3.1 and conclusions from 3.2 and discussions with SWW.

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
3.4 River Plym (Ditsworthy Warren Leat) Increase flows down river and if required, vary abstraction licence to ensure flow protection conditions or enter into a works agreement.	Agency/IMERYS	U	*	*	*	*		Hydrometric monitoring at the Ditsworthy Warren abstraction commenced in June 1999. Investigation into smolts within Leat undertaken during spring 1999. Voluntary agreement has been reached with IMERYS to control the abstraction regime, so as to increase flows down the river.

Catchment Abstraction Management Strategy

Nearly everyone who needs to abstract water from rivers, canals, reservoirs, lakes or from groundwater sources requires a licence from the Environment Agency. There are about 48,000 licensed abstractions in England and Wales.

The present system for control of water resources was introduced in 1965. Since then demand for water has increased throughout England and Wales. In addition to increased demand, environmental uncertainties and expectations are growing and commercial practices have changed. The existing system no longer reflects the best way of managing water for the future.

After the drought in the mid 1990's and increasing public awareness that some licensed abstractions are contributing to environmental damage, the Government undertook a review of the abstraction licensing system. Its final decisions published in March 1999 in the document *Taking Water Responsibly* will result in major changes to the system. These will affect all licence holders and other parties with an interest in the management and control of water resources.

The major initiative of CAMS will provide the opportunity, at a local level, for groups and individuals to contribute to the development of the strategy to be adopted for the catchment. CAMS will provide information on:

- The availability of water in a catchment;
- Licensing practice in dealing with new applications;
- Changes needed to the abstraction regime in the catchment to achieve the sustainable long-term use of water resources;
- A transparent basis for planning by abstractors, the Agency and all other interested parties.

Effects of historic metalliferous mining on tributaries of the River Lynher

The legacy of historic metalliferous mining is evident throughout the Tamar system. The most important mining area was a 3km wide band at the tidal limit of the River Tamar, embracing an extensive area of mineralisation extending into the Tavy and Lynher catchments. The effects of this industry are still impacting on the environment today through discharges of metalliferous compounds into watercourses from old mine workings.

This part of the plan area was historically one of the most important and intensively mined areas in the South West, particularly for copper and arsenic. In the late nineteenth century, the area around Gunnislake produced nearly half the world's arsenic. Mining activities have left a legacy of effects on the environment: elevated levels of copper and zinc in watercourses, altered groundwater flows through underground workings and abandoned spoil heaps.

Fish surveys in the Lynher catchment indicate a lower than expected number of juvenile salmon in the River Lynher and its tributaries. The reasons for the apparent low juvenile densities are presently not known. Metalliferous discharges may be a factor. The Agency is currently undertaking a study of the River Lynher tributaries. Biological samples have been taken to assess macro invertebrate populations. In addition the Agency is investigating potential remediation measures that could ameliorate the impact of metalliferous contaminants.

Management of historic mining sites

Many former mining sites are particularly rich in unusual bryophyte (mosses and liverworts) communities, others are important for dragonflies and damselflies. These sites can have significant industrial archaeological importance and may need protecting and preserving rather than remediation.

The high arsenic, copper and zinc content of spoil tips stops much vegetation growing on the tips. This, combined with often unauthorised leisure activities, can lead to potentially harmful dust being released from the tips. The local authority takes a lead role in potential environmental health issues.

Cornwall County Council, as a mineral planning authority, has recently produced a strategy for former mining sites in parts of the Tamar Valley. The Agency has commented on the proposals and seeks to work in partnership to minimise adverse effects on the environment. 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.

Table 16

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
Issue 1: Minimise the effects of historic mining areas								
1.1 Work in partnership to carry out appropriate proposals in the Tamar Valley strategy	CCC Local Planning Authorities, Agency	U						Discussions have taken place between the Agency, County and District Planners in developments and potential developments at Calstock Quay, Okel Tor Mine, Gunnislake Clitters Mine.
1.2 Control or minimise disturbance of former mining sites via planning procedure.	DCC/CCC	U						
Issue 2: NEW ACTION: Investigation of contaminated sediment								
2.1 Understand further and consider the potential effects from the disturbance of contaminated sediments from future development below the high water mark.	TECF	U				*	*	
Issue 3: NEW ACTION: Produce guide on control and consents for development below high water mark								
3.1 Assist in the development of a guide to statutory controls and consents for development below high water mark	TECF	U				*	*	
Issue 4: Effects of historic metalliferous mining on the tributaries of the River Lynher								
4.1 Investigate the potential for remediation of tributaries of the River Lynher for salmonid spawning	Agency	U		*	*	*	*	Exeter University are currently investigating the use of Glaucomite as a means of remediating tributaries of the River Lynher impacted by metalliferous mine waste.

4.8.1 China Clay

China clay discharges affecting water quality
Following liaison with IMERYS (IMERYS Minerals Ltd formerly ECCI) on the issue of 'dirty' surface water runoff from china clay operations, a level of awareness has been raised within the company. This has triggered investment in new portable water quality monitoring equipment to help identify sites at risk. Identification of sites will allow the company to take effective actions to reduce the impact of their site drainage on water quality.

Action	Lead Body	Cost (£)	Financial Year					Progress
			98	99	00	01	02	
Issue 1: Other discharges impacting water quality								
1.1 Investigate impact of china clay discharges on invertebrate communities.	Agency	U						Assessed and no action proposed.
1.2 Reduce 'dirty' surface water runoff from china clay operations.	Agency/ IMERYS	U	*	*	*	*	*	Following liaison between the Agency and IMERYS, the company has invested in new portable monitoring equipment to help to identify risk sites and reduce the impact of site drainage on water quality.

4.9 Contaminated Land

Section 57 of the Environment Act 1995 enacts Part IIA of the Environmental Protection Act (1990) came into force on 1st April 2000. This allows for the identification of land that 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 (the local authority or the Agency) 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.

The legislation comprises 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.

Local Authorities have the sole responsibility for the identification of land that 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 (e.g. nuclear sites), or because our historical background means that we have the most appropriate experience (e.g. sites with significant water pollution), or for other particular reasons (such as MoD land).

Responsibilities under Part IIA Environmental Protection Act 1990	
Local Authorities:	**Environment Agency:**
• Inspect their area to identify contaminated land. • Consult the Agency on pollution of controlled waters. • Ensure remediation of land identified as contaminated land. • Transfer "special sites" to the Agency. • Maintain remediation registers	• Provide information to local authorities on contaminated land. • Ensure remediation of "special sites" • Maintain a register of special sites' remediation. • Prepare a national report on the state of contaminated land. • Provide advice on quality of controlled waters.

4.10 Climate Change

The Agency was on the steering group for the recent Climatic Challenge Conference held at St Mellion in October 1999. This major conference drew together European experts on climate change and translated their reports into positive and negative effects on the South West Region. Critical to the plan area, increased tourism potential must be offset against increased flood risk, additional pressures on water resources, the need to adapt agriculture to changing climate and the increased erosion risk of higher sea levels and increased storminess. Full details of the conference proceedings can be found on the website: www.climatic-challenge.org.uk.

Flood defence schemes are designed to accommodate future sea level rises. The Intergovernmental Panel produces information regarding the predicted rise in sea level 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. Future flood defences at Looe for example, will have allowances for sea level rise included.

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.

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.

4.5.0.2 Shoreline Management Plans

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 groups that have prepared Shoreline Management plans. The group comprises the County Council and all maritime local authorities. The two plans covering the area are Lyme Bay and South Devon Coastline to Rame Head and Rame Head to the Lizard. These have been consulted upon and are being implemented. Each contains the agreed management option for each section of the coast.

Appraisal of strategic coastal defence options has lead to the management options for sections of the coast 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.

Management Unit	Management Option
Challaborough to East of Wembury	Selectively hold existing defence line to maintain the continuity of the Coast Path, maintain integrity of designated sites, maintain bathing beach quality and not impinge on navigational access to the Rivers Erme and Yealm.
West of Wembury to Wembury Point	Carry out no coastal defence except for safety measures to maintain continuity of the coastline, maintain integrity of designated sites and maintain the recreational value of the area.
Wembury Point to Mount Batten Point	Selectively hold existing defence line to protect Plymouth, Plymstock and other developed areas, maintain continuity of the Coast Path, maintain recreation and amenity values of the coastline, protect important archaeological sites and not impinge on navigational access in Plymouth Sound.
Mount Batten Point to Cremyll	Selectively hold existing defence line to protect Plymouth, not impinge on navigational access in Plymouth Sound, maintain bathing beach quality, maintain recreation and amenity values of the coastline, protect important archaeological sites.
Cremyll to Kingsand	Carry out no coastal defence except for safety measures to maintain continuity of the Coast Line, maintain integrity of designated sites and protect Rame Peninsula AGHV, maintain or enhance the recreational and amenity values of the coastline and not impinge on the navigational use of Plymouth Sound.
Kingsand to Cawsand	Selectively hold existing defence line to protect Kingsand and Cawsand, maintain continuity of the Coast Path, maintain recreation and amenity values of the coastline, protect important archaeological sites and Rame Peninsula AGHV.

Cawsand to Rame Head	Carry out no coastal defence except for safety measures to maintain continuity of the Coast Line, maintain integrity of designated sites and protect Rame Peninsula AGHV.
Tregonhawke and Freathy	Carry out no coastal defence except for safety measures long-term to maintain shore dock populations and natural features, with no properties at risk through cliff erosion.
Portwrinkle	Includes developed frontage of Portwrinkle and cliffs of Hoodney Cove, which feed material to the beach in the lee of Portwrinkle Harbour. Carry out no coastal defence except for safety measures short term in Hoodney Cove. Long-term hold existing defence line elsewhere to protect assets at risk.

Table 16

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
Issue 1: The need to understand coastal processes								
1.1 Develop Lyme Bay & South Devon Shoreline Management Plan.	West Dorset District Council	21k	*	*				The SMP will be updated every 5 years based on data and information collected in the intervening years. Action complete.
1.2 Develop Rame Head to Lizard Shoreline Management Plan.	Kerrier, Carado n and Restor mal District Council	29k	*	*				External consultation on this plan took place in 1999. Formal adoption by the Agency and other operating authorities took place at the end of 1999. The SMP will be updated every 5 years based on data and information collected in the intervening years. Action complete.

Rivers and coastline change as the forces of water shape the land. We operate to the presumption that natural river or coastal processes should not be disrupted, except where people or important natural or manmade assets are at risk.

Riparian owners have the right in common law, to repair their banks and protect land from the effects of erosion, as long as this is accomplished without injury to the property of others and does not cause obstruction to flow. They require consent to carry out such work and we will seek to ensure that appropriate methods and material are used. Previous works have sometimes had significant detrimental effects on the river morphology, wildlife and landscape.

Where erosion control is necessary we will encourage early control by landowners, using traditional methods and materials where possible, to avoid the need for extensive and more environmentally damaging and soft engineering

techniques. We will also encourage the reinstatement of areas where insensitive practices have been used. We will only use public funds to control erosion if the watercourse is 'main river' and if certain criteria are satisfied.

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.

4.11 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 including both new and capital improvement schemes and maintenance.

Bye Report/Easter 98 Flood Actions 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. The Agency, having considered the Bye Report has implemented a comprehensive action plan. Many of the actions from this plan are now complete. Any important ongoing actions now form part of the MAFF High Level Targets and Elaboration of the Agency's Supervisory Duties for Flood Defence. The remaining important actions which are ongoing are as follows:

- Establish a National Flood Warning Centre - centre now established at Frimley but as yet not fully resourced.
- Improve provision of data from telemetry systems and its use in giving warnings - planned programme of improvements to the system/network are ongoing

Maintenance

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

The cost of maintenance varies each year depending on need; it is generally in the order of £300,000 for the plan area. Meetings are held as necessary to outline our maintenance programme to external conservation bodies. Each year within this programme some conservation and recreational improvements are carried out.

MAFF High Level Targets and Elaboration of the Agency's Supervisory Duty

The South West Region is progressing work on target, to deliver the MAFF High Level Targets and elaboration of the Agency's Supervisory Duty. The targets cover the following activities:

- Provision of flood warning
- Emergency exercises and emergency plans
- Development of National Flood and Coastal Defence Database
- Flood defence inspections and assessment of flood risk
- Completion and updating of Shoreline Management Plans
- Losses and gains of habitats covered by Biodiversity Diversity Action Plans
- Progress on Coastal Habitat Management Plans
- Report on Development in areas at risk of flooding and coastal erosion

The timescale for delivery of individual actions within this list vary from April 2000 to April 2002, and some require annual reporting.

The elaboration of the Supervisory Duty is based upon the spirit of the legislative framework that currently exists, where the Environment Act 1995 sets the scope of the Supervisory Duty as "all matters relating to flood defence".

These wide ranging duties can be divided into the following sections:

- Condition of the flood and coastal defences and critical ordinary watercourses, to include the use of a national flood and coastal defence asset database
- Assessment of flood risk
- Achievement of high level targets
- Emergency response to flooding incidents
- Awareness of flood risk in the community
- Future development proposals that have potential impact on flood risk
- Regulation of others
- Application of conservation duty and environmental impact

The above targets and duties will significantly increase the workload of the Agency and will involve additional liaison with Local Authorities, Cornwall and Devon County Councils and other interested parties.

Table 17

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
Issue 1: The need for a fully integrated Flood Defence Management Manual and supporting System								
1.1 Develop and implement system.	Agency	137k (across region)	*	*	*			System is now being used. Further development is planned as part of High Level Targets 4 and 5.
Issue 2: Provide accurate flood warnings								
2.1 Study into the level of service for flood warning (FWLOSS).	Agency	15k	*	*				Completed March 2000.
2.2 Update, enhance and maintain flood warning database.	Agency	Part of regional cost	*	*	*	*	*	All recipients on the database at least once a year are contacted. Active participation and liaison by recipients of warnings is welcomed and encouraged.
Issue 3: Emergency planning								
3.1 Draw up major incident plans	Agency, Local authorities, emergency services	U		*	*			Substantially completed summer 1999. Scheduled to be completed by Summer 2000.

[redacted]

At present time no major capital schemes are planned. Future needs will be kept under constant review.

[redacted]

New flood warning codes were launched by the Agency on 12th September 2000. Implementation completes one of the Agency's most important flood warning actions following the Easter floods of 1998. The action plan set a target for introducing simpler warning codes from the year 2000.

Encouraging people to take action to protect themselves and their property from the worst effects of flooding was the focus of Flood Action Week held in September 2000. The event also launched the new system of flood warning.

The new flood warning system is in four stages from Flood Watch to Flood Warning to Severe Flood Warning and finally All Clear. The Agency has spent two years developing the new codes and preparing for their introduction with the involvement of the public, emergency services, local authorities and others involved in flooding response.

4.12 Development Pressures

Development pressures

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 control of land use is primarily the responsibility of Local Planning Authorities (LPAs) through statutory responsibilities under 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 further in Appendix 2.

All planning authorities were provided with an updated flood risk data survey in September 1999. These show flood plain information on all main rivers and on key ordinary watercourses in the area.

The Agency is encouraging the adoption of Sustainable Urban Drainage Systems; the selective use of structures such as soakaways as part of a development to promote infiltration. These would help to replenish groundwater as well as reduce the erosion potential in watercourses, however their use must be site dependent. A video on source control 'Nature's Way' has been produced by the Agency and is available to planning authorities and other interested groups. In addition recent publications include 'An Introduction to Sustainable Urban Drainage Systems' available from the Agency and a design manual produced and available from DETR and the Construction Industry Research and Information Association (CIRIA).

There are a number of locations where consented sewage treatment discharges are having an environmental impact where we recommend development constraint. These are listed in our regularly updated consultation guides.

Major developments

Increasing demand for development land is expanding the urban centres and requiring the increased use of 'brown field' sites, potentially contaminated from their historic use. On both urban and 'green field' sites there are a number of large-scale development proposals that may present risks of environmental damage or enhanced flood risk within the catchment. The Agency would wish

to influence these proposals through involvement both before and during the planning application procedure. Examples of such sites include:

- the RAFT development and the Langage Power Stations in Plymouth, which are covered in this document;
- the Broadmoor Farm development in Caradon and the Seaton Barracks site in Plymouth are sites which would represent an opportunity to mitigate against increased run-off impact through the use of SUDS;
- a proposed new town located to the east of Plymouth where the issues of available water resources, sewage treatment, surface water run-off and conservation impact must be addressed.

Waterfront development

The Agency normally objects to the infilling of intertidal areas to protect them as a wildlife habitat. The Tamar foreshore can also include archaeological features and contributes to the landscape value of the basin as a whole. In addition to the individual loss of wildlife and other features, the intertidal areas are part of a complex of physical and ecological interactions, which are interrupted, with the cumulative piecemeal loss of the intertidal area for land gain.

When a development proposal includes infilling parts of the foreshore we assess the ecological, archaeological and landscape impact and whether there are suitable alternatives to the proposed development.

We are working with other TECF members such as the Local Authorities, English Nature and MAFF to tackle the cumulative effect of piecemeal infilling of intertidal land around the coastal fringe of the Tamar Estuary.

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 significant water use, with respect to water resources and water efficiency. 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.

Flooding

Local planning authorities and ourselves are required by the DETR (in circular 30/92- Development and Flood Risk) to liaise closely on flooding and surface water runoff matters. New guidance for development and flood risk is currently being prepared.

Table 18

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
Issue 1: Possible impact of development on ground and surface waters in the LEAP area.								
1.1 Promote source control through policies and increased awareness.	Agency	On-going	*	*	*	*	*	Sustainable Urban Drainage Schemes (SUDs) promoted as opportunities arise. This action has been superseded and is complete.
Issue 2: Identify and review areas where the environment is at risk of impact from further development								
2.1 Produce consultation guides for District Councils	Agency	U	*	*	*	*	*	Consultation guides were produced for South Hams in 1996, West Devon 1997, Caradon and North Cornwall 1998. They are planned to be updated next year.
Issue 3: Promote the adoption of development restraint areas.								
3.1 Present revised consultation guide to planning committees and explain the need for development constraint	DCC/ CCC/Local Authorities	U	*	*	*	*	*	The existing consultation guides have been adopted by the local authorities.
Issue 4: Promote sustainable drainage								
4.1 Promote principles of sustainable drainage to planning committees and officers	Agency, Local Planning Authorities	U	*	*	*	*	*	We ask for a policy on the use of SUDs to be included in Local Plans when they are circulated to us for consultation.
4.2 Encourage developers to consider the use of sustainable drainage on site-specific proposals.	Agency	U						We encourage the use of SUDS by developers when we meet them to discuss development proposals and in our comments in planning enquiries where appropriate.
Issue 5: Ensure that the integrity of the European marine site is not compromised by inappropriate development								
5.1 Investigate cumulative effects of piecemeal infilling of intertidal land	TECF	U				*	*	Working in partnership to tackle this issue through TECF forum.

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
Issue 6: Flooding downstream from existing and new development								
6.1 Maintain an up-to-date record of locations at risk of flooding and of catchments where additional development could increase the risk.	Agency	<1k/year	*	*	*	*	*	The 1999/2000 S105 contract is completed. This has added more indicative floodplains on non-main rivers to our floodplain records. Flood incidents locations map is annually updated. Catchments where additional development could increase flood risk are added as necessary.
6.2 Provide advice to LPAs on development to prevent increase in flood risk.	Agency	U	*	*	*	*	*	Floodplain information for main rivers has been made available to local authorities.

4.13 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 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 Devon and Cornwall.

The LA21 Officers for Caradon and North Cornwall District Council have recently produced a 'Green Action Guide'. This guide gives simple ideas, tips and information to help make a difference through everyday decisions. The guide is available from either North Cornwall or Caradon District Council or can be downloaded from www.caradon.gov.uk

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.

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 was published in May 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 and Unitary Authorities
These are the waste planning authorities and the waste disposal authorities. As waste planning authorities they are responsible for developing a countywide waste strategy, the Waste Local Plan. They also have the responsibility for determining planning applications relating to waste management activities. As the waste disposal authorities they are 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.

Waste Contractors
There are a large number of waste contractors operating within Devon and Cornwall. The principle operator for the disposal of household waste in Cornwall is County Environmental Services Ltd (CES) who are wholly owned by Cornwall County Council. CES manage four landfill sites (two operational outside the area) and a number of transfer stations and civic amenity sites in the county, and are contracted to take all household waste produced in Cornwall. In Devon it is Devon Waste Management and the Unitary Authorities such as Plymouth who are the principal waste operators.

The Current Position in Devon and Cornwall

The following list shows the various types of waste that is currently produced in Cornwall and Devon;

- Household
- Commercial/Industrial
- Construction/Demolition waste
- Special/Hazardous Waste
- Clinical Waste
- Sewage sludge
- Scrap Metals
- Agricultural Wastes
- Mines and Quarries Wastes
- Dredged spoils

Cornwall produces approximately 30 million tonnes of waste each year, of which approximately 22 million tonnes arise from mining and quarrying and 6 million tonnes from agriculture. Approximately 1.28 million tonnes of commercial,

industrial and household waste are produced each year, of which 217,000 tonnes comes from household collections. The amount of waste produced in Cornwall is increasing each year. (Source - Cornwall Waste Local Plan, Consultation Draft)

Cornwall currently recycles approximately 6% of domestic waste, compared to 7.5% nationally (1996/97), with the rest going to landfill. Devon currently produces approximately 1.408 million tonnes of commercial, industrial and household waste (source: Waste Management Assessment for the South West, Environment Agency). Plymouth achieved a recycling rate of 16.5% in 1998/1999 and hopes to achieve a 25% recycling level by 2002 (source - Don't Waste Our Future, Plymouth City Council).

There are two operational landfill sites in Cornwall (Connon Bridge, United Mines) that accept household, commercial and industrial waste, but these have limited life span. Detailed estimates of the remaining life expectancy of these sites are available in the Cornwall Waste Local Plan, consultation draft. Holwood Quarry is closed as a landfill but still operates a civic amenity site. The current site at United Mines, which receives approximately 57 % of the commercial, industrial and household wastes from Cornwall, will be exhausted in 2002. At current rates of waste disposal Connon Bridge will close during 2008, however, if no alternative to United Mines is found, Connon Bridge will be full by 2004.

In West Devon there are also two operational landfill sites (Chelson Meadow, Combebow) which both accept household, commercial and industrial waste. At current rates of waste disposal Chelson Meadow will be exhausted in 2006 and Combebow in 2004.

The Agency has compiled an 'Industrial and Commercial Waste Minimisation and Recycling Directory, 1998' for each of its areas in the South West Region. These directories highlight opportunities for recycling in industrial and commercial organisations and offers best practice advice for responsible waste management. Copies of the Directory for the relevant area are available from your local Agency Office.

Landfill tax is set at present at £11 per tonne for active wastes and £2 per tonne for inactive wastes. In 1999 the Chancellor announced increases in the active waste tax of £1/tonne/yr up to £15/tonne/yr in 2004.

Waste Survey

In April 1999 the Environment Agency completed a national waste production survey. Agency staff and consultants visited or telephoned many thousands of businesses. Information on the types and quantities of wastes generated and how they are managed has been entered onto the National Waste Database. This information has undergone detailed analysis and has been used to inform the Government's Waste Strategy 2000 for England and Wales that was presented to Parliament in May 2000 and is described below. The information from the waste survey has been used in the Agency's Strategic Waste Management Assessments that will be published in Autumn 2000. It is also hoped that the final results of the waste survey will be published during 2000.

Waste Strategy 2000

The strategy for the first time sets statutory targets for migration of wastes from reliance on landfill towards recycling and recovery initiatives. The current 9% recycling being achieved is to be extended to:

- Recycle or compost at least 25% of household wastes by 2005
- Recycle or compost at least 30% of household wastes by 2010
- Recycle or compost at least 33% of household wastes by 2015

The strategy recognises the need for development of recyclable markets and the direction of landfill tax funding towards green initiatives. It will also introduce tradable permits restricting waste volumes that local authorities can send to landfill.

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 not unlikely 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.

ReMaDe Initiative

The aim of this initiative is to develop local markets for recyclable materials in Cornwall. The challenge is to move from landfill dominated waste management towards solutions based on recycling i.e. more sustainable waste management. Material specific projects will be identified and established. The project is capable of being extended to other materials and expanded to adjoining local authority areas.

The principles of developing local markets are to find higher value and new uses for recycled materials within industries outside those that produced the material. The benefits of local re-manufacture and use include adding value to recyclables, creating local employment, eliminating transport to more distant markets and protecting recycling programmes from price fluctuations.

County Environmental Services has established a working group to examine the issues in detail with a view to initiating a market development programme for Cornwall.

The future

The way waste is managed in Devon and Cornwall will be affected by national, county and local initiatives e.g. the Government's Waste Strategy 2000.

Various legal requirements are also place increasing emphasis on the recovery and recycling of wastes, particularly within industrial sectors, as follows:

- Producer Responsibility Obligations (Packaging Waste) Regulations 1997. This legislation places targets on businesses in the packaging chain to recycle or recover certain volumes of packaging waste, dependant upon the volume they handle. The aim of the regulations is to divert wastes away from landfill and to encourage changes in packaging design.

- Landfill Tax. The operators of landfill sites pay this tax for every tonne of taxable waste taken to the site. From 1 April 1999 the tax rates are £2 for every tonne of inert waste and £10 for every tonne of putrescible wastes. The aim of the tax is to encourage other routes for recovering or re-using waste rather than landfill.

- Landfill Directive. This directive requires that reductions are made in the volumes of biodegradable wastes going to landfill. The directive also requires the treatment of certain types of waste prior to disposal and the banning of other waste from landfill, such as explosive, clinical, and liquid waste or tyres.

Through consultation on this LEAP the waste management industry has indicated that it requires a stable market place to encourage investment in alternative waste management initiatives. The costs of setting up new waste management facilities are high. The legal requirements are constantly changing and the market is fluctuating. In a business environment where investment-planning horizons are set at 10 or 20 years, it is difficult to secure investment when the waste industry can only make forecasts for the next 5 years. These concerns have been reflected in the Agency's response to "Away With Waste".

Strategic Waste Management Assessment (SWMA)
There will be an SWMA produced for the South West by the Agency which will be published in Autumn 2000. The document will detail figures for the remaining capacity of landfills, transfer stations and treatment plants in the South West (including Devon and Cornwall). It will also contain disposal figures for the region. The document should provide information to the local authorities to assist them in producing their Waste Local Plans and to the Waste Management Industry.

Waste licensing
There are two active landfill sites in the area accepting domestic wastes: Combebow and Chelson Meadow. One other site, Crowndale Landfill that is now closed, is recorded as having historically accepted significant volumes of domestic wastes. As a major population centre Plymouth and outlying towns produce large amounts of waste. Disposal, now and in the future is an issue. The scale of the problem depends on the success of other waste management options such as Plymouth City Council's twin bin recycling scheme.

With the exception of special wastes using the consignment note system and household wastes, for which closely monitored collection and disposal contracts are in place, there is only sparse information on the types and quantities of wastes generated in Devon and Cornwall. The Environment Agency's national survey of waste arisings has been completed and the Agency is to prepare a Regional Waste Management Plan, based on the survey findings.

Leachate
Leachate escaping from Crowndale Tip site (identified in the Consultation Report) is still having a localised impact on the River Tavy. Devon County Council, who owns and operates the site, has not yet committed funds to solving the problem. We will be seeking this commitment through the five-year period of this Action Plan.

Marine litter
In association with Plymouth City Council, Caradon District Council, English Nature and Cattewater Harbour Commissioners, South West Water and Sutton Harbour Company we have supported an initiative to highlight the sources and fates of marine litter in Plymouth Sound and the estuaries. The outcome of the project is a strategy to both reduce inputs and to clean up existing and future litter in the area. A programme of education and provision of skips, bins and voluntary clean-ups all feature in the strategy.

Table 19

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
Issue 1: The need for a regional waste strategy								
1.1 Undertake waste arisings survey.	Agency	U	*	*	*			The survey was completed in March 1999. The results should be published during 2000.
1.2 Draw up SWMA strategy.	Agency							Published Autumn 2000.
Issue 2: The need for reduction in waste production and the proportion going to landfill								
2.1 Stimulate waste minimisation initiatives through the work of PAYBACK.	Agency / Business/ environmental organisations/Local Authorities	On-going U	*	*	*	*	*	East Cornwall Waste Minimisation Club was launched in March 2000 when 12 companies attended. The Club will run until the end of the year. There will be a similar Club running in Plymouth in early 2001 following the success of the previous Plymouth club in 1999.
Issue 3: Encourage recycling facilities								
3.1 Seek to ensure Agency interests are considered in Local Authority promotions	Local authorities/Agency	U	*	*	*	*	*	The Agency is currently working with the Local Authorities and County Environmental Trust in Cornwall to produce a new recycling directory for household and industrial waste

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
Issue 4: Promote waste minimisation								
4.1 Provide support for initiative by businesses, PAYBACK, Groundwork, and local authorities, and seek to ensure Agency interests are considered in such promotions.	Local authorities/Agency	U	*	*	*	*	*	Plymouth Waste Exchange is a project that will encourage industries to analyse their waste and identify which waste materials could be used by other companies.
Issue 5: Campaign to highlight flytipping problems								
5.1 Where opportunities arise	Local authorities, Agency	U	*	*	*	*	*	An internal campaign group has been set up to prioritise the issues.
Issue 6: Determination of licence at Anvil Corner								
6.1 Apply for licence	Devon County Council	U	*	*	*			A draft application has been commented on and discussions are ongoing for the formal application for the waste management licensing.
6.2 Determine Licence	Agency	U						
Issue 7: Ensure compliance with the Groundwater Regulations and Regulation 15 of the Waste Management licensing Regulations 1994.								
7.1 Carry out a review of licences for landfill sites which are subject to the regulations	Agency, DWM, CES	U	*	*	*			This work has been delayed nationally to allow for the implementation of the Landfill Directive.
Issue 8: Find best environmental option for Combebow landfill site								
8.1 Agree leachate management plan for the treatment and disposal of leachate from Combebow landfill site	DWM, Agency	U	*	*	*			Continued liaison between Agency and Devon Waste Management Ltd on effective ways of managing and disposing of leachate and Combebow landfill site with the view to producing a sustainable leachate management plan.

4.13 Waste Spreading to Land

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 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 and the Government is consulting on legislative change on the processing of land spreading applications to ensure that potential pollution effects or habitat loss do not occur.

Sludge disposal to land

Land is already used for the disposal of agricultural and industrial wastes and sewage sludge. In 1998 the disposal of sewage sludges at sea was prohibited by the EC Urban Waste Water Treatment Directive increasing disposal to land. Good management practices and the use of existing codes will mean this could benefit the land agriculturally, however there is a risk of pollution if care is not taken.

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
Managing waste spreading to land								
Review of waste to land practices	Agency/ landowners/ spreaders/MAFF	U	*	*	*			Part of wider DETR review of waste exemptions. Ongoing

Energy from waste
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 and Devon.

In the recently released Deposit Draft Waste Local Plan for Cornwall a location of search in central Cornwall has been identified for an energy from waste plant. This is essentially a power station fuelled by waste. From final 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 and is supported in the National Water Strategy 2000.

A further method of obtaining energy from waste is through collection and use of methane gas from existing landfill sites. Chelson Meadow in Plymouth has a plant on site that generates three Mw of electricity from the collection of methane gas produced.

Holsworthy Bio-gas scheme
The Bio-gas scheme is a major proposal to utilise cattle slurry and food waste by anaerobic digestion to produce electricity, heating, a solid compost and a liquid fertiliser. The Agency has received a draft waste management licensing application and is conducting in-depth discussions with the project team.

4.14 Air Quality

We do not cover all aspects of air pollution but work closely with other regulatory bodies such as local authorities.

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.

Langage Power Station
Wainstones Power Ltd have applied to the Department of Trade & Industry for Consent under Section 36 of the Electricity Act 1989, to construct and operate an electricity generating station at Langage. This power station will require an authorisation granted by the Agency under Section 6 of EPA90 for operating a combustion process. The process consists of two combined cycle gas turbines and one open cycle gas turbine (for emergency use only) producing 1,000 MW electrical output, which is for supply to the National Grid system. Natural gas is the normal fuel for each turbine with stand-by oil burning limited to a maximum of 10 days operation per year.

The Agency requires that incinerators are appropriately sized and comply with strict regulatory controls under an IPPC permit. Sizing is vital so that opportunities for waste minimisation and recycling are not crowded out. The Agency recommends the use of Life Cycle Analysis in determining the Best Practical Environmental Option in any waste strategy. Within the area of this LEAP document assessment of waste disposal options between Devon and Cornwall must also be considered.

Full details of the application and further information supplied by the company including dispersion modelling of releases to atmosphere have been placed on the public register. There are no releases to controlled waters. The Agency has granted the authorisation, which became effective on 31st July 1999. This proposal will now have to re-apply and be assessed under the Pollution Prevention and Control Regulations 1999 for an IPPC permit.

4.15 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 provision of practical advice and guidance, the promotion of advisory literature, regular inspection and promotional talks or seminars, the Agency does not only act in a regulatory role.

The Agency in the Cornwall Area has recently set up an internal pollution, prevention and control (PPC) campaign group which will be looking to undertake pollution prevention work in areas which we have identified as existing or potential problem areas.

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
Issue 1: Pollution prevention and contingency planning								
1.1 Provide practical advice and guidance to landowners on pollution prevention	Agency	U	*	*	*	*	*	This is ongoing as part of core work
1.2 Promote education and campaigns to highlight pollution prevention measures throughout industry and at home	Agency	U	*	*	*	*	*	A campaign group has been set up to look at specific issues. A recent project campaign was the 'oil care code' householder's leaflet.

4.15.1 Integrated Pollution Prevention and Control (IPPC)

The IPPC Directive is designed to prevent, reduce and eliminate pollution at source through the prudent use of natural resources. It is intended to help industrial operators move towards greater environmental sustainability.

The Pollution Prevention Control Act 1999 provides for the implementation of EC Directive 96/61 on Integrated Pollution Prevention and Control and consequently the introduction of a single pollution control regime for England and Wales.
Under the regulations, the Agency will have an essential role in regulating specified types of activity and installation. These include current integrated pollution control sites, landfills and discharge activities already licensed by the Agency as well as a number of new activities such as intensive pig and poultry farming and the food and drink industry.

What will be required of operators?

Operators will need to show that they will run their installations in a way that prevents emissions to the land, air and water or where that is not practicable, reduces them to a minimum.
Operations must apply the following general principles:
Use Best Available Techniques in controlling discharges to air, soil and water and addressing other issues such as odour, noise and vibration.
Minimise waste and recycle it where they can
Conserve energy
Prevent accidents and limit their environmental consequences
Return the site to a satisfactory state after the operation cease

4.15.2 Oil Spill Contingency Planning

Potential oil spills could come from land or water borne sources inside or outside the estuary. Although those responsible had an existing contingency plan it will need to be significantly reviewed. It will need to be strengthened following the estuary's recent designation under the European wildlife directive and local government reorganisation in the area. A working group comprising English Nature, Environment Agency, Ministry of Defence, County and City Councils has been revising the oil spill contingency plan. This has now been published as Tamar Estuaries Oil Spill Countermeasures Plan.

Table 20

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
Issue 1: The need for an Oil spill Contingency Plan								
1.1 Establish booming and anchoring points and establish maintenance regime.	Agency /EN/ TECF plus other local	10k	*	*	*			The majority of the booming points have now been put in place.

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
	authorities/Working Group/ /MoD/ Oil Industry/Harbour Authorities							A communication exercise was held and the lessons learnt are being incorporated into the plan.
1.2 Revise and test (as appropriate) existing contingency plan.	As above	U		*	*	*	*	Practical and desktop exercises training are being revised. Ongoing programme of training and testing.

4.15.3 The Eclipse 1999

The Agency, along with other authorities, had made contingency plans for the Eclipse in August 1999. In the event, the large predicted crowds did not materialise and no major problems were encountered.

4.16 Devonport

Radioactive Substances Act 1993

Devonport Dockyard

Following concern over the occurrence of carbon 14, a radionuclide, in radioactive wastes from Devonport Royal Dockyard Ltd (DML), the Agency required the Company to apply for a variation to its existing authorisations for disposal of radioactive waste. DML applied for a variation to include a limit for Carbon 14 in low level radioactive waste for disposal at BNFL, Drigg in Cumbria, the national repository for radioactive waste or by transfer to UKAEA Winfrith in Dorset prior to disposal at Drigg. A public meeting was held in July 1999 and the Agency have taken into account all the issues raised at the meeting. The Agency has produced a Decision Document which has been sent to DETR and DoH; a determination of the variation to DMLs authorisation will be made when a response from DETR and DoH has been received.

In addition, DML applied to the Environment Agency in May 2000 for revised authorisations to dispose of solid, liquid and gaseous radioactive waste. The application follows the dockyard's selection by the Ministry of Defence for the refitting of the new Vanguard class Trident submarines. Work is due to start on the first of the submarines, HMS Vanguard, in February 2002.

The Agency is consulting widely on the application and a public meeting was held in Plymouth in June 2000 at which DML explained the reasons for the application and the Agency explained the authorisation and consultation procedures and the determination process. The Agency will carefully consider responses and any issues raised at the public meeting, as if they had been made as a part of the formal consultation process, before reaching its final decision. The Agency is producing a consultation document and a formal three months consultation will be held commencing in early 2001.

The Agency's Consultation Document with proposed draft limits will be made widely available to members of the public. There will be press notices and press briefings at the time the formal consultation commences. The Agency will only reach a decision after all the issues raised have been considered. The reasons for the Agency's decision will be set out in a Decision Document to be issued at the time that the decision is made. This Decision document will also record the major issues raised in the consultation and the Agency's response and views on those issues.

Table 21

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
Issue 1: NEW ACTION Determine authorisation at Devonport Dockyard								
1.1 Process new authorisations within the statutory timescale when received.	Agency	U				*	*	

Remote Ammunitioning Facility Tamar (RAFT)

The Remote Ammunitioning Facility Tamar (RAFT) is a development by the MoD to provide ammunitioning and de-ammunitioning facilities for surface ships and submarines in the Tamar. No nuclear weapons are involved.

The issue of public safety is reported to have led to this operation being moved from Devonport to a new jetty to be constructed off Bull Point. This issue has informed the decision of both Plymouth City Council and the Secretary of State to approve this development despite the risk of impact on the Tamar as a candidate Special Area of Conservation (cSAC). Both the Agency and English Nature objected to this development, however, these approvals have come with conditions to mitigate against the potential impacts, and both organisations are working with the MoD to ensure that these mitigation considerations are effective.

These conditions include restrictions on the timing of dredging operations, monitoring and control on the water quality surrounding the site and the compensatory creation of new habitats. They are to mitigate against the effects of inter- and sub-tidal habitat loss, remobilization of sediments with associated water quality impacts and detrimental effects on benthic communities and fish species within the Tamar. In addition surveys are being carried out both before

and after the development to assess any impacts. Further controls are exerted by MAFF in relation to the disposal of dredged material from the site, and the Duchy of Cornwall who, as landowners, will lease the part of the river required for this development.

Currently English Nature and ourselves are awaiting a final version of a Conservation Management Plan, which will be an agreement between all parties detailing how these mitigation proposals will be carried out.

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The Agency will be consulting widely on the application before determining a new authorisation

Table 21

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
Issue 1: NEW ACTION Determine authorisation at Devonport Dockyard								
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4.17 Management of Tamar Lakes

The two Tamar Lakes lie near the head of the River Tamar and therefore have influence over much of the upper part of the river system. There are a number of interconnecting issues relevant to the management of the Lakes, which are best resolved in conjunction with each other, and with the involvement of all interested parties.

Investigating concerns over low flows
We will be investigating the historic and current flow regimes relating to the use of the Tamar Lakes with a view to clarifying the impact of the lakes on the downstream flow of the Tamar. The influence of flows from the Lamberal Water will also be investigated.

This work will clarify the impact of the Upper and Lower Tamar Lakes on the downstream volumetric flow of the River Tamar. The investigation will consider the effects of the existing abstraction licence conditions for Upper Tamar Lake, the influence of flows from Lamberal Water and the retention of flows within Lower Tamar Lake. In addition the investigation will consider the changing role of the Lower Tamar Lake as an amenity feature and the current study into the restoration of the Bude Canal which is being led by North Cornwall District Council.

Land drainage can exacerbate low flows in rivers because it removes water, which would normally soak into the ground and consequently make up the baseflow of watercourses in times of lower rainfall. The use of buffer zones and source control in appropriate locations can aid the infiltration of groundwater and can improve water quality.

Effects of algal blooms
Blue-green algae blooms have been reported in Upper Tamar Lake over the past few years, although the problem has been on going since the 1970's. During the summer of 1995 a severe bloom of the blue-green algae *Aphanizomenon flos-aquae* in the lakes spread downstream into the river system where it continued to

proliferate. Failures of the EC Freshwater Fish Directive in previous years in both the Upper and Lower Tamar Lakes are linked to these algal blooms. These failures occurred because of high pH, which was a result of photosynthesising algal blooms.

During 1997 the Agency carried out a biological study of the Upper Tamar Lake and the surrounding area to try to gain an understanding of the trophic and ecological status of the lake. The conclusions of this study were that the extent of the eutrophication within Upper Tamar Lake is likely to be having a deleterious effect on the river downstream of the impoundment. The study recommended continued monitoring to determine the sources of nutrient enrichment, to consider methods of reservoir management and to make relevant Environmental Health authorities aware of possible health risks from recreation on the Upper Tamar Lake at times of algae blooms. In 1998 biological and chemical investigations continued within both the lakes. These investigations are continuing throughout 1999 and 2000.

Water quality compliance

The River Tamar from its source to the Upper Tamar Lake was non-compliant for Total Ammonia in 1997. Agriculture is likely to be a contributory factor and pollution prevention works are being carried out. The River Tamar from the Lower Tamar Lake outflow to Polson Bridge was non-compliant for biochemical oxygen demand (BOD). Non-compliance with River Quality Objectives (RQOs) in this stretch may be linked to effects of algal blooms moving downstream from the Tamar Lakes.

We are working in partnership with SWW to pursue a number of actions to minimise the effects of algae blooms in the Tamar Lakes, the primary concern is the catchment and the not the operation of the reservoir.

Table 22

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
Issue 1: Concerns over low flow								
1.1 Carry out investigation of low flows and make recommendations on appropriate future actions	Agency	U						Ongoing
Issue 2: Promote the use of buffer zones and source control in appropriate locations								
2.1 Promote the use of buffer zones.	WCRT, Agency, landowners	U			*	*	*	Projects ongoing. Fencing work carried out above lakes.
Issue 3: Nutrient enrichment and consequent algal blooms identify best environmental options to minimise effects of algal blooms. Overall issue								
3.1 Investigate sources of nutrients to Tamar Lakes	Agency	U		*	*			Ongoing monitoring and farm visits to pinpoint sources

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
3.2 Identify polluting sources and influence farmers in the best management of dealing with farm waste in the lake catchment	Agency	U			*	*	*	Ongoing programme of farm visits above the lakes.
3.3 Carry out monitoring throughout catchment to identify effects attributable to algae on fish.	WRT, Agency	U						Ongoing
3.2 Identify best environmental options for managing the Lake	SWW	U						Discussions ongoing

APPENDIX 1: DEVON AND CORNWALL BIODIVERSITY ACTION PLAN

The following are a list of actions from the Devon and Cornwall Biodiversity Initiatives - Biodiversity Action Plan.

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

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
Actions for individual species and habitats arising from the Biodiversity Action Plan								
Continue development and implementation of the Biodiversity Action Plan for Devon's Rivers and Wetlands (Devon's RWBAP).	EN/ DWT/ Agency	U	*	*	*	*	*	The Agency supports BAPs and works in partnership with other interested bodies.
Continue support of the Cornwall Biodiversity Initiative to produce actions specific to the Cornish part of the catchment.	CWT/ EN/ Agency	15k	*					The biodiversity Action Plan was published in July 1998.
Investigate extent of current and potential flood plain wetlands using Section 105 surveys.	Agency	U	*	*		*	*	Our Section 105 surveys provide much digitised floodplain information.
Continue production and updating of wildlife inventories.	EN/ RSPB/ CWT/ DWT/ Agency	U	*	*	*	*	*	Survey of some aquatic mammals and birds carried out as part of the Electro fishing survey. A report on the Shad in the River Tamar was completed in August 1999.
County-wide survey of sand martins.	Devon Birdwatching & Preservation Society	none to Agency	*					We contribute information on nest sites found through our rare species surveys

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
Triangular Clubrush								
Continue to collaborate on the project with EN and Kew gardens to re-introduce 600 more plants to the Tamar Estuary area.	Agency, EN, Kew gardens							3-year re-introduction programme completed in 1999. Future monitoring of re-introduced populations to develop management prescriptions.
Shore dock								
Establish monitoring and research programme of ecological conditions including identifying standards that will maintain shore dock populations	Agency / others	U						Countrywide surveys of Devon and Cornwall completed in 1999.
Little egret								
Ensure that little egret is taken into account in estuary management plans, candidate SACs and SPA and related single schemes of management	TECF/Agency / others	U						Work on this topic is ongoing.
Sea Birds and Waders								
Inform contingency planning (e.g. disaster planning, shipping route management) exercises of important areas for seabirds / hard coast birds.	Agency/ others							Ongoing
European otter								
Appointment of an Otter and River project officer, funded jointly by the Agency and Cornwall Wildlife Trust. The officer will be responsible for	Agency / others	U						The officer was appointed in March 1999

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
promoting otter conservation throughout the County. Continue to mitigate against accidental killing or injury, particularly on key catchments.	Agency/ others							
Farmland habitats and species								
Promoting sustainable farming practices on the river Lynher.	FWAG							There is a FWAG project being undertaken on the River Lynher
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 (e.g. 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 requirements of Cornwall priority species.	Agency / others	U						Geographical Information Systems being installed to assist data management.

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
Provide information on the suitability of sites for pond creation and promote where appropriate, as well as advising on best practice for pond creation, to farmers and smaller landowners.	Agency/ others	U						Ongoing
Promote creation of buffer strips along watercourses, in order to prevent ongoing agricultural run-off and reduce the impact of specific pollution incidents.	Agency/ others	U						Ongoing
Coastal zone								
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.
Highlight the value of whole farm management plans and promote their adoption as a requirement of grant in aid in all catchments , so as to reduce pollution in coastal areas								This is covered through the work of the Lynher Project. Details of this project are included in the 'Protection Through Partnership' section of this Review

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
Estuaries								
Ensure proper examination of the system through which byelaws are created, given the difficulty of creating environmental byelaws. By 2000.	Agency / others	U						The Agency is involved in the production of a Cockle Harvesting Byelaw.
Produce interpretative material which may be used in isolation, such as leaflet for Tamar estuary, or integrated within existing publications	TECF/ Agency / others	U						Work on producing and disseminating information is ongoing. The Port of Plymouth Events Diary 2000 has been published by TECF
Identify three sites for saltmarsh re-creation and ensure re-creation work is underway by 2000	TECF/ Agency / others	U						1 site at Cotehele so far identified
Incorporate boardwalks and interpretation in managed retreat schemes, where appropriate.	Agency / others							Admiralty chart information has been produced for the Tamar estuary.
Produce interpretation material that may be used in isolation, such as leaflets for each estuary.	Agency / others							Work on producing and disseminating information is ongoing.
Boundary features								
Identify vulnerable sites at risk of invasion by Japanese knotweed and promote eradication.	Agency / others	U						This action is an integral part of the countywide survey, being complied by the Botanical Society of the British Isles.
Ensure that the recently convened 'Japanese knotweed	Agency / others	U						This is an ongoing action.

Action	Lead Body	Cost (£)	Financial years					Progress
			98	99	00	01	02	
control forum for Cornwall' continues to develop, discuss and disseminate information on, and methods for the control of, Japanese knotweed								
Promote best practice and make information available to landowners on knotweed control, now and in future, as best practice is clarified	Agency / others	U						The Agency distributes a leaflet explaining how to prevent the spread of Knotweed. Best practice for control of Knotweed has been adopted by our Flood Defence maintenance teams.
Evaluate the status of Japanese knotweed and produce an inventory of sites (possibly on GIS).	Agency / others	U						The results of the survey are being compiled by the Botanical society.
Collate information and if necessary, instigate research on knotweed control.	Agency / others	U						The Agency has been involved with the National Trust in eradication trials surrounding the St Austell River.
Encourage favourable management of boundary features, especially hedges, verges and ditches, through, in particular, favourable cutting practices	Agency/ others	U						

APPENDIX 2: DUTIES, POWERS AND INTERESTS OF THE ENVIRONMENT AGENCY

The Agency and Local Authorities share the aim of sustainable development and have environmental powers and duties that largely complement one another, as is indicated below, and which individually and collectively make a contribution to protecting the environment and enhancing the quality of life of local communities.

Environment Agency	Local Authorities
Flood Defence main rivers and coasts and overall supervision	Flood Defence ordinary watercourses. Coastal protection
Water abstraction licensing	Private domestic water supplies
Water discharge consenting	Highway drainage
Major industrial processes/sites	Local air quality management, minor processes/sites and domestic
Waste regulation, including radioactive	Litter control, waste planning and municipal waste management
Land contamination, general advice and special sites	Land contamination - general duties
Fisheries, water based recreation, navigation, conservation	Tourism, recreation, heritage, amenity, culture
Advice to developers and local authorities on town and country planning and on environmental assessment	Town and country planning and environmental assessment

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 :
Water Resources The Agency has a duty to conserve, redistribute, augment and secure the proper use of water resources.	Grant or vary abstraction and impoundment licences on application with appropriate conditions imposed to safeguard the needs of the environment, whilst allowing reasonable and justified use of available and sustainable water resources for other uses - with the aim of achieving an equal balance between the competing demand. Issue conservation	The more efficient use of water by water companies, developers, industry, agriculture and the public and the introduction of water-efficiency measures and suitable design and layout of the infrastructure. Protecting the water environment from any adverse impact due to	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.

Agency Duty :	The Agency has powers to:	The Agency has an interest (but no direct powers) in:	Partnership :
	notices to direct appropriate practices with regard to water resources issues associated with exempt dewatering activities.	proposed major developments.	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. The Agency uses its position of statutory consultee to the planning authorities to secure conditions and agreements to protect the water. The Agency will work closely with developers and industry in an effort to encourage and secure protection and good management of water resources.
Flood Defence The Agency has a duty to exercise general supervision over all matters relating to flood defence throughout each catchment.	Control, through Land Drainage consents, 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). Produce flood risk maps for all main rivers under S105 of Water Resources Act 1991. Undertake works to main rivers using permissive powers.	Granting of planning permission throughout a catchment but especially floodplains where development can significantly increase flood risk. This permission is granted by local planning authorities. Installation of surface water source control measures e.g. flood attenuation	As a statutory consultee on planning applications within main-river floodplains, the Agency offers advice based on knowledge of flood risk. It also advises on the environmental impacts of proposed floodplain development. The Agency will encourage best practice, including source-control measures and common standards, among local authorities and riparian owners to protect and enhance the environment. The Agency works with the

Agency Duty :	The Agency has powers to:	The Agency has an interest (but no direct powers) in:	Partnership :
	Issue flood warnings relating to main river to the public, local authorities and the police. Consent mineral workings within 16 metres of main rivers.	structures. Supervising the maintenance of ordinary watercourses which is a local authority remit, but may impact on main rivers. Installation of buffer zones which reduce flood risk and have significant environmental benefits. Urban and rural land use and measures that can reduce flood risk or the need for watercourse maintenance.	civil authorities to prepare flood-warning dissemination plans and supports their endeavours to protect communities at risk.
Water Quality The Agency has a duty to monitor, protect, manage and, where possible, enhance the quality of all controlled waters including rivers, groundwaters, lakes, canals, estuaries and coastal waters through the prevention and control of pollution.	Issue discharge consents to control pollution loads in controlled waters. Regulate discharges to controlled waters and into or onto land in respect of water quality through the issue and enforcement of discharge consents. Prosecute polluters and recover the costs of clean-up operations.	The control of runoff from roads and highways. This is a Highway Agency duty. The greater use of source-control measures to reduce pollution by surface-water runoff. Prevention and education campaigns to reduce pollution incidents.	The Agency will liaise with local authorities, developers, the Highways authorities, 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.
Fisheries The Agency has a duty to maintain, improve and develop salmon, trout, freshwater	Prosecute offenders who use illegal methods to take fish and can seek forfeiture of all associated	The determination of planning applications which could affect fisheries.	Many development schemes have significant implications for fisheries. The Agency will work with anglers, riparian owners, developers and

Agency Duty :	The Agency has powers to:	The Agency has an interest (but no direct powers) in:	Partnership :
and eel fisheries.	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-entrapment 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.		local authorities to protect fisheries.
Air Quality The Agency has a duty to implement Part 1 of the Environment Protection Act 1990.	Regulate the largest technically complex and potentially most polluting prescribed industrial processes such as refineries, chemical works and power stations including enforcement of, and guidance on, BATNEEC and BPEO. Have regard to the government's National Air Quality Strategy when setting standards for the releases to air from industrial processes.	The vast number of smaller industrial processes which are controlled by local authorities. Control over vehicular emissions and transport planning.	The Agency provides data on IPC processes and advice on planning applications to local authorities. The Agency is willing to offer its technical experience to local authorities on the control of air pollution The Agency wishes to liaise with local authorities in the production of their Air Quality Management Plans. The Agency will advise and contribute to the government's National Air Quality Strategy

Agency Duty :	**The Agency has powers to:**	**The Agency has an interest (but no direct powers) in:**	**Partnership :**
Radioactive Substances The Agency has a duty under the Radioactive Substances Act 1993 to regulate the use of radioactive materials and the disposal of radioactive waste.	To issue certificates to users of radioactive materials and disposers of radioactive waste, with an overall objective of protecting members of the public.	The health effects of radiation.	The Agency will work with users of the radioactive materials to ensure that radioactive wastes are not unnecessarily created, and that they are safely and appropriately disposed of. The Agency will work with MAFF to ensure that the disposal of radioactive waste creates no unacceptable effects on the food chain. The Agency will work with the Nuclear Installations Inspectorate to ensure adequate protection of workers and the public at nuclear sites. The Agency will work with the HSE on worker-protection issues at non-nuclear sites.
Waste Management The Agency has a duty to regulate the management of waste, including the treatment, storage, transport and disposal of controlled waste, to prevent pollution of the environment, harm to public health or detriment to local amenities.	Vary waste management licence conditions. Suspend and revoke licences. Investigate and prosecute illegal waste management operations	The siting and granting of planning permission for waste management facilities. This is conducted by the waste industry and local planning authorities. The Agency, as a statutory consultee on planning applications, can advise on such matters.	The Agency will work with waste producers, the waste-management industry and local authorities to reduce the amount of waste produced, increase re - use and recycling and improve standards of disposal.

Agency Duty :	**The Agency has powers to:**	**The Agency has an interest (but no direct powers) in:**	**Partnership :**
Contaminated Land The Agency has a duty to develop an integrated approach to the prevention and control of land contamination ensuring that remediation is proportionate to risks and cost-effective in terms of the economy and environment.	Regulate the remediation of contaminated land designated as special sites. Prevent future land contamination by means of its IPC, Water Quality and other statutory powers. Report on the state of contaminated land.	Securing with others, including local authorities, landowners and developers, the safe remediation of contaminated land.	The Agency supports land remediation and will promote this with developers and local authorities and other stakeholders.
Conservation The Agency will further conservation, wherever possible, when carrying out water-management functions; have regard to conservation when carrying out pollution-control functions; and promote the conservation of flora and fauna which are dependent on an aquatic environment.	The Agency has no direct conservation powers, but uses its powers with regard to water management and pollution control to exploit opportunities for furthering and promoting conservation.	The conservation impacts of new development. These are controlled by local planning authorities. Protection of specific sites or species, which is a function of English Nature. The Agency does, however, provide advice to local authorities and developers to protect the integrity of such sites or species. Implementation of the UK Biodiversity Plan for which it is the contact point for 12 species and one habitat.	The Agency supports action to sustain or improve natural and man-made assets so that they are made available for the benefit of present and future generations. Many development schemes have significant implications for conservation. The Agency will work with developers, local authorities, conservation bodies and landowners to conserve and enhance biodiversity.

Agency Duty :	**The Agency has powers to:**	**The Agency has an interest (but no direct powers) In:**	**Partnership :**
Landscape The Agency will further landscape conservation and enhancement when carrying out water-management functions; have regard to the landscape when carrying out pollution-control functions; and promote the conservation and enhancement of the natural beauty of rivers and associated land.	The Agency must further the conservation and enhancement of natural beauty when exercising its water-management powers and have regard to the landscape in exercising its pollution-control powers.	The landscape impact of new development, particularly within river corridors. This is controlled by local planning authorities.	The Agency produces 'River Landscape Assessments and Design Guidelines' which it uses when working with Local Authorities and developers to conserve and enhance diverse river landscapes.
Archaeology The Agency has a duty to consider the impact of all of its regulatory, operational and advising activities upon archaeology and heritage, and implement mitigation and enhancement measures where appropriate.	The Agency must promote its archaeological objectives though the exercise of its water-management and pollution-control powers and duties.	Direct protection or management of sites or archaeological or heritage interest. This is carried out by local planning authorities, County Archaeologists and English Heritage.	The Agency will liaise with those organisations, which have direct control over archaeological and heritage issues to assist in the conservation and enhancement of these interests.
Recreation The Agency has a duty to promote rivers and water space for recreational use.	The Agency contributes towards its recreation duty through the exercise of its statutory powers and duties in water management.	Promotion of water sports. This is carried out by Sport England and other sports bodies.	The Agency will work with the Countryside Agency, Sport England, British Waterways and other recreational and amenity organisations to optimise recreational use of the water environment.

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.

River Quality Objectives in the Tamar Area 1998

River Name	Public Stretch Name	Public Stretch Top NGR	Public Stretch Bottom NGR	1998 URN	Highest Quality RQO	Compliance 1998
TAMAR	Source-Upper Tamar Lake Inflow	SS27051665	SS28031319	91210355	2	Pass
TAMAR	Lower Tamar Lake-Footbr D/S Tamar Lakes	SS29541078	SS29561070	91210269	2	BOD(3,3)-Significant Fail
TAMAR	Footbr D/S Tamar Lakes-Tamarstone Bridge	SS29561070	SS28350548	91210233	2	BOD(3,2)-Marginal Fail
TAMAR	Tamarstone Bridge-Crowford Bridge	SS28350548	SX28739944	91210168	2	BOD(3,2)-Marginal Fail
TAMAR	Crowford Bridge-Tamerton Bridge	SX28739944	SX31769738	91210131	2	BOD(3,2)-Marginal Fail
TAMAR	Tamerton Br-Below Conf With River Deer	SX31769738	SX31909726	91210127	2	BOD(3,2)-Marginal Fail
TAMAR	Below Conf With River Deer-Boyton Bridge	SX31909726	SX32849228	81290191	2	BOD(3,3)-Significant Fail
TAMAR	Boyton Bridge-Netherbridge	SX32849228	SX34838675	81290141	2	BOD(3,3)-Significant Fail
TAMAR	Netherbridge-Polson Bridge	SX34838675	SX35598490	81290111	2	BOD(3,2)-Marginal Fail
TAMAR	Polson Bridge-Greystone Bridge	SX35598490	SX36838038	81250277	2	Pass
TAMAR	Greystone Bridge-Above Hingston Quarry	SX36838038	SX41807259	81250239	2	Pass

River Name	Public Stretch Name	Public Stretch Top NGR	Public Stretch Bottom NGR	1998 URN	Highest Quality RQO	Compliance 1998
TAMAR	U/S Hingston Quarry-D/S Hingston Quarry	SX41807259	SX41867254	81250174	2	Pass
TAMAR	Below Hingston Quarry-Normal Tidal Limit	SX41867254	SX43697113	81250144	2	Pass
INNY	Source-Upstream Of Davidstow Creamery	SX14508593	SX15338702	91241191	1	BOD(2,1)Marginal Fail
INNY	Upstream Of Davidstow Creamery-St. Clether Bridge	SX15338702	SX20618418	91241162	1	Pass
INNY	St. Clether Bridge-Two Bridges	SX20618418	SX27068175	91241146	1	Pass
INNY	Two Bridges-Trecarrell Bridge	SX27068175	SX32027713	91241119	1	Pass
INNY	Trecarrell Bridge-Tamar Confluence	SX32027713	SX37957793	91241113	1	Pass
PENPONT WATER	Source-Trelyn Bridge	SX16558266	SX20028286	91241770	1	Pass
PENPONT WATER	Trelyn Bridge-Inny Confluence	SX20028286	SX27148163	91241709	1	Pass
LOWLEY STREAM	Landlake Bridge-Tamar Confluence	SX32878235	SX36447867	81252104	1	Pass
LYD	Source-A386 Roadbridge Lydford	SX55688838	SX52058446	81261180	1	Pass
LYD	A386 Roadbridge Lydford-Greenlanes Br	SX52058446	SX44368325	81261152	2	Pass
LYD	Greenlanes Bridge-Tamar Confluence	SX44368325	SX37458401	81261111	2	Pass
THRUSHEL	Source-Rivermead Bridge	SX54809278	SX49889128	81271266	2	Pass
THRUSHEL	Rivermead Bridge-Stowford Bridge	SX49889128	SX42808735	81271225	2	Pass
THRUSHEL	Stowford Bridge-Lyd Confluence	SX42808735	SX39218499	81271202	2	Pass
WOLF	Source-Roadford Reservoir Inflow	SX46409683	SX43489337	81271593	2	Pass
WOLF	Roadford Reservoir-Roadford New Bridge	SX42079003	SX41898981	81271526	2	Pass
WOLF	Roadford New Bridge-Rexon Bridge	SX41898981	SX41338885	81271510	2	Pass
WOLF	Rexon Bridge-Thrushel Conf	SX41338885	SX40268594	81271502	2	Pass
QUITHER STREAM	Source-Lyd Confluence	SX47188128	SX42628396	81261102	1	Pass
LEW (TAMAR)	Source-Combebow Bridge	SX54729066	SX48538793	81261439	2	Pass
LEW (TAMAR)	Combebow Bridge-Lyd Confluence	SX48538793	SX44078336	81261402	1	BOD(2,1)-Marginal Fail
COMBEBOW STREAM	Source-Lew Confluence	SX48818798	SX48538793	81261439	2	Pass
KENSEY	Badharlick Bridge-Truscott Bridge	SX26758643	SX29878499	91231134	2	Pass
KENSEY	Truscott Bridge-Newport	SX29878499	SX32708511	91231113	1	BOD(2,1)-Marginal Fail
KENSEY	Newport-Tamar Confluence	SX32708511	SX35278488	91231102	1	Pass
CAREY	Source-Ashmill Bridge	SS43350027	SX39359534	81281161	2	Pass
CAREY	Ashmill Bridge-Boldford Bridge	SX39359534	SX36428828	81281111	2	Pass
CAREY	Boldford Bridge-Tamar Confluence	SX36428828	SX35028560	81281105	2	Pass
OTTERY	Source-Trengune Bridge	SX17128827	SX18899328	91221180	2	Pass
OTTERY	Trengune Bridge-Canworthy Water Bridge	SX18899328	SX22409173	91221170	2	Pass

River Name	Public Stretch Name	Public Stretch Top NGR	Public Stretch Bottom NGR	1998 URN	Highest Quality RQO	Compliance 1998
OTTERY	Canworthy Water Bridge-Hellescott Bridge	SX22409173	SX28558777	91221137	2	Pass
OTTERY	Hellescott Bridge-Tamar Confluence	SX28558777	SX34778685	91221108	2	Pass
BOLESBRIDGE WATER	Source-Ottery Conf	SX28609444	SX29368781	91221520	2	BOD(4,3)-Significant Fail
CAUDWORTHY WATER	Source-Ottery Confluence	SX27059654	SX26828887	91221702	2	Pass
CANWORTHY WATER	Source-Ottery Confluence	SX22268768	SX22489172	91222208	1	Pass
CLAW	Source-Claw Bridge	SS40390330	SS37460071	81201166	2	Pass
CLAW	Claw Bridge-Tamar Confluence	SS37460071	SX32249643	81201106	2	Pass
DEER	Source-Rydon Bridge	SS33910927	SS33560415	81201470	2	Pass
DEER	Rydon Bridge-Tamar Confluence	SS33560415	SX31919732	81201402	2	BOD(3,2)-Marginal Fail
COLESMILL STREAM	U/S Holsworthy Stw-Deer Conf	SS34050324	SS33880318	81201602	2	BOD(3,2)-Marginal Fail
DERRIL WATER	Source-Tamar Confluence	SS31800350	SX30289865	91211328	2	Pass
SMALL STREAM(TAMAR)	Source-Headon Bridge	SS32360947	SS31000731	91212023	2	Pass
SMALL STREAM(TAMAR)	Headon Bridge-Tamar Confluence	SS31000731	SS27830407	91212027	2	Pass
YEALM	Source-Hele Cross	SX61476488	SX61476088	81020186	1	PHLow(5,5)-Significant Fail (NB Data Set Aside Provision
YEALM	Hele Cross-Fardel Mill Farm Bridge	SX61476088	SX60255720	81020165	1	Pass
YEALM	Fardel Mill Farm Br-Below Ridgecot Lake	SX60255720	SX60195702	81020161	1	Pass
YEALM	Below Ridgecot Lake-Popple's Bridge	SX60195702	SX59855432	81020137	1	Pass
YEALM	Popple's Bridge-Above Yealmpton Stw	SX59855432	SX57755139	81020118	1	Pass
YEALM	Above Yealmpton Stw-Below Yealmpton Stw	SX57755139	SX57655139	81020109	1	Pass
YEALM	Below Yealmpton Stw-Normal Tidal Limit	SX57655139	SX56535102	81020103	1	Pass
NEWTON STREAM	Source – Normal Tidal Limit	SX60824940	SX55554820	81010234	1	Bod(2,1)-Marginal Fail, Total Ammonia(2,2)-Significant Fail
SILVERBRIDGE LAKE	Source-Normal Tidal Limit	SX58005740	SX55485115	81010826	2	Pass
LONG STREAM	Source-Yealm Confluence	SX62625402	SX59215211	81020408	1	BOD(2,1)-Marginal Fail
PIALL	Quick Bridge-Yealm Confluence	SX59106080	SX60175705	81020802	1	Pass
PLYM	Source-Below Blackabrook	SX62116831	SX56396450	81120310	1	pH Low(5,5)-Significant Fail (NB Data Set Aside Provision
PLYM	Below Blackabrook-Cadover Bridge	SX56396450	SX55566465	81120288	1	pH Low(5.5)-Significant Fail (NB Data Set Aside Provision)
PLYM	Cadover Bridge-Shaugh Bridge	SX55566465	SX53356368	81120275	1	pH Low (5,1)-Marginal Fail (NB Data Set Aside Provision)
PLYM	Shaugh Bridge-Normal Tidal Limit	SX53356368	SX51765710	81120120	1	Pass
TORY STREAM	Tolchmoor Bridge-Portworthy Bridge	SX57866173	SX55626008	81111865	1	pH Low(5,1)-Marginal Fail (NB Data Set Aside Provision) Total Ammonia(2,2)-Sign. Fail
TORY STREAM	Portworthy Bridge-Normal Tidal Limit	SX55626008	SX52445663	81111808	2	Pass
WOTTER STREAM	Source-Tory Stream Confluence	SX56256200	SX56806070	81112220	1	Pass
MEAVY	Source-Weir Above Burrator Reservoir	SX58427328	SX56696925	81121473	1	Pass

River Name	Public Stretch Name	Public Stretch Top NGR	Public Stretch Bottom NGR	1998 URN	Highest Quality RQO	Compliance 1998
MEAVY	Burrator Reservoir-Below Burrator Res	SX55156800	SX55146791	81121455	1	Pass
MEAVY	Below Burrator Res-Plym Confluence	SX55146791	SX53306369	81121402	1	BOD(2,1)-Marginal Fail
LYNHER	Source-Trebartha Road Bridge	SX20067897	SX26307778	91251730	1	Pass
LYNHER	Trebartha Road Bridge-Berriowbridge	SX26307778	SX27337564	91251693	1	Pass
LYNHER	Berriowbridge-Rilla Mill Bridge	SX27337564	SX29487311	91251658	1	Pass
LYNHER	Rilla Mill Bridge-Bicton Mill Bridge	SX29487311	SX32157005	91251640	1	BOD(2,1)-Marginal Fail
LYNHER	Bicton Mill Bridge-Newbridge	SX32157005	SX34736801	91251635	1	BOD(2,1)-Marginal Fail
LYNHER	Newbridge-Clapper Bridge	SX34736801	SX35156526	91251630	1	BOD(2,1)-Marginal Fail
LYNHER	Clapper Bridge-Pillaton Bridge	SX35156526	SX36506324	91251619	1	BOD(2,1)-Marginal Fail, Total Zinc(3,1)-Marginal Fail
LYNHER	Pillaton Bridge-Normal Tidal Limit	SX36506324	SX38506090	91251605	1	BOD(2,1)-Marginal Fail
TIDDY	Above Pensilva STW-Tilland Mill Bridge	SX29006890	SX32886188	91261150	2	Pass
TIDDY	Tilland Mill Bridge-Normal Tidal Limit	SX32886188	SX35705970	91261128	2	Pass
KELLY STREAM	Haye-Lynher Confluence	SX34706991	SX33856858	91252506	3	Total Ammonia(5,4)-Significant Fail, Unionised Ammonia(4,1)-Marginal Fail
WITHEY STREAM	Source-Upstream Of Bastreet Wtw Intake	SX25197245	SX24357637	91253928	1	pH Low(5,5)-Significant Fail (NB Data Set Aside Provision)
WITHEY STREAM	Above Bastreet Wtw Intake-Lynher Confluence	SX24357637	SX26167719	91253904	1	Pass
TAMERTON FOLIOT STREAM	Source-Normal Tidal Limit	SX49926282	SX46686090	81221550	2	Pass
TAVY	Source-Hill Bridge	SX59478204	SX53218040	81231190	1	Pass
TAVY	Hill Bridge-Harford Bridge	SX53218040	SX50577678	81231185	1	Pass
TAVY	Harford Bridge-Kelly School	SX50577678	SX49157500	81231175	1	Pass
TAVY	Kelly School-West Bridge	SX49157500	SX47687378	81231171	2	Pass
TAVY	West Bridge-Below Crowndale Stw	SX47687378	SX47027211	81231155	2	Pass
TAVY	Below Crowndale Stw-Wash Ford	SX47027211	SX47007105	81231144	1	Pass
TAVY	Wash Ford-Denham Bridge	SX47007105	SX47696776	81231133	1	Pass
TAVY	Denham Bridge-Normal Tidal Limit	SX47696776	SX47446503	81231119	1	Pass
MILTON STREAM	Source-Normal Tidal Limit	SX51026762	SX57386486	81221920	1	Pass
WALKHAM	Source-Merrivale Bridge	SX58008099	SX55007510	81241155	1	pH Low(5,5)-Significant Fail (NB Data Set Aside Provision) Total Zinc(3,1)-Marginal Fail
WALKHAM	Merrivale Bridge-Ward Bridge	SX55007510	SX54217203	81241146	1	Pass
WALKHAM	Ward Bridge-Magpie Bridge	SX54217203	SX50387035	81241123	1	Pass
WALKHAM	Magpie Bridge-Tavy Confluence	SX50387035	SX47596990	81241110	1	Pass
LUMBURN	Source-Rushford Bridge	SX46497868	SX44967635	81231764	1	Pass
LUMBURN	Rushford Bridge-Tavy Confluence	SX44967635	SX46627172	81231702	1	Pass
BURN (TAVY)	Source-Tavy Confluence	SX50408283	SX49637600	81232403	1	Pass

River Name	Public Stretch Name	Public Stretch Top NGR	Public Stretch Bottom NGR	1998 URN	Highest Quality RQO	Compliance 1998
CHOLWELL STREAM	Source-Tavy Confluence	SX52108173	SX50887830	81232708	1	Total Zinc(3,3)-Significant Fail (NB Data Set Aside Provision)

EC Directives

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

EC Freshwater Fish Directive

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

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

We are responsible for monitoring the quality of identified fisheries and reporting the results to 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 Surface Water Abstraction Directive

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

The Directive sets out standards that must be achieved, for water for public supply, which is to be given different levels of treatment. We are responsible for monitoring the quality of designated surface water abstractions and reporting the results to the DETR who decide whether the standards in the Directive have been met. Where standards are not met, we are responsible for identifying sources of pollution and making sure that improvements are made.

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.

EC Bathing Waters Directive

The two main aims of the EC Bathing Waters Directive (76/160/EEC) are to improve, or maintain, the quality of designated bathing waters for amenity reasons and to protect public health. The Environment Agency is required to sample and analyse bathing waters in accordance with the requirements of the Directive and report the results to the Department of Transport, Environment and Regions (DETR). The DETR uses the results to assess compliance of individual bathing waters and reports the results to the European Commission on an annual basis. Although the Environment Agency implements the sampling and analysis in response to the Directive, it does not have any responsibilities for public health.

The Environment Agency seeks to improve the degree of compliance with the Directive by ensuring that discharges to, or in the vicinity of, bathing waters are of adequate quality. The required improvements are included in the AMP programmes of the relevant Waters Companies. Water Quality data relating to this Directive are made available on the Public Register and are published on the Agency's internet web pages.

APPENDIX 4: ACKNOWLEDGEMENTS

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

Mr R Bastard	Riparian Owner, River Yealm
Mr D Beardsley	Area Environment Group
Cllr N Burden	North Cornwall District Council, AEG
Mrs V J Burns	Local Interests
Mr B S Burrows	Regional Fisheries Advisory Committee, Tamar Tavy Lynher Netsmen Association
Mr J Chadwick	Area Environment Group
Mrs J Chappell	North Cornwall District Council
Mr J Dawe	National Farmers Union
Mr R Dean	Environmental Planning Manager, Plymouth City Council
Mr G Dollard	Tamar and Tributaries Fisheries Association
Mr D Fletcher	Coastal Officer, Tamar Estuaries Consultative Forum
Mr ER Gill	National Farmers Union
Ms R Hodder	Project Officer, Tamar Valley AONB
Mr P Jones	Environmental Risk Assessment Manager, Devonport Management Ltd
Lady E Kitson	Member Dartmoor National Park
Mrs MR Lane	Devon Wildlife Trust
Dr D Lewis	Cornwall Area Environment Group
Mr D L Owen	Plymouth & District Fishing Association
Mr I Parker	Tavy, Walkham & Plym Fishing Club
Ms J Perry	Forward Planning Officer, West Devon Borough Council
Mr J Perry	Riparian Interests
Mr M Stanbury	Regional Flood Defence Committee
Mr J Stewart	English Nature
Mr R McCawley	South West Water
Mr R B Treleaven	Launceston Anglers
Cdr S Turner	Queens Harbour Master
Mr A Vickery	Devon Waste Management Ltd
Mrs A Voss-Bark MBE	Tamar and Tributaries Fisheries Association
Mr A J White	River Lynher Fisheries Association
Mr P Winter	Torridge District Council

APPENDIX 5: USEFUL REFERENCES

TECF (Tamar Estuaries Consultative Forum) 2000. *Tamar Estuaries Management Plan 2000.* Plymouth City Council. Devon

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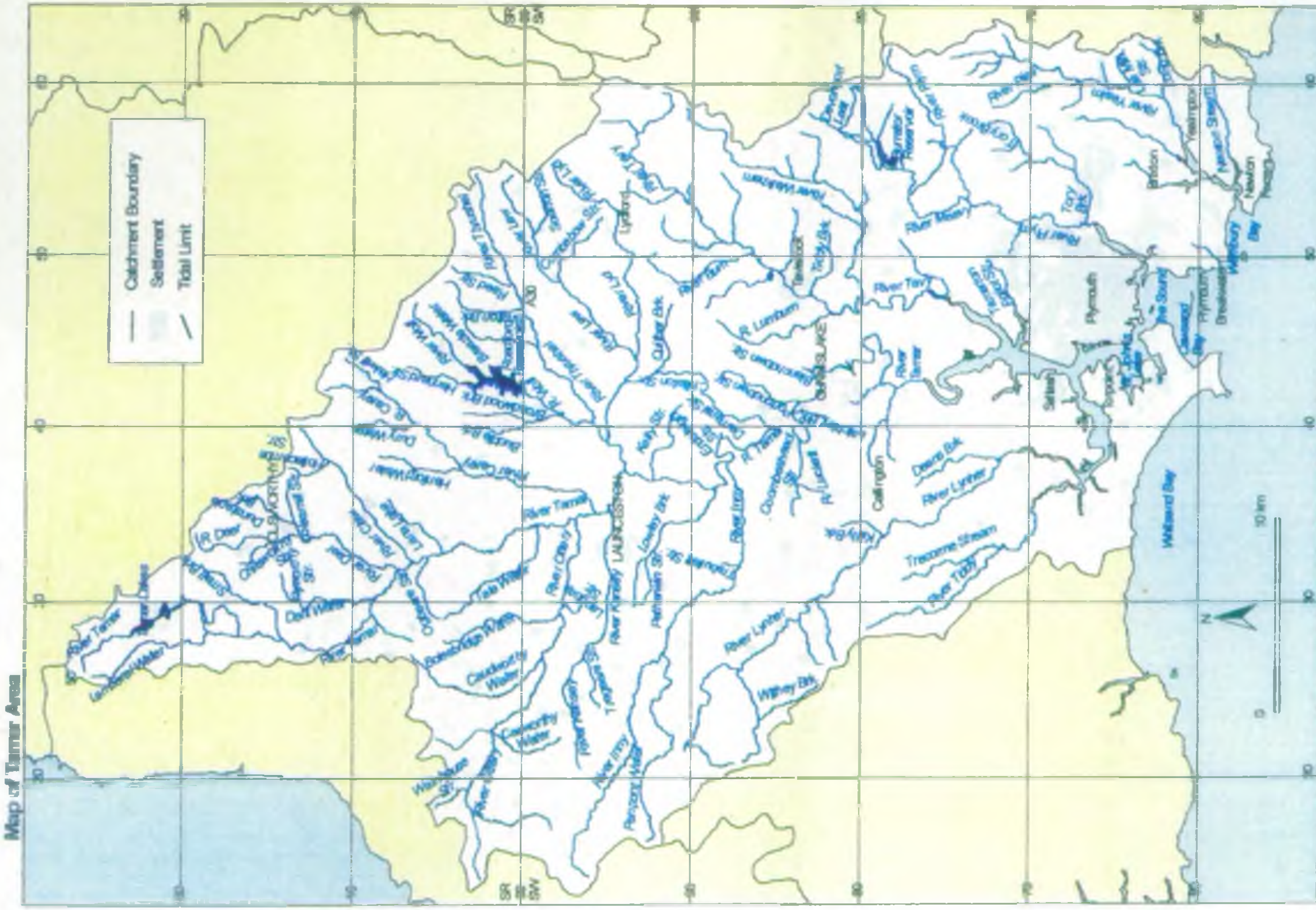
ENVIRONMENT AGENCY

Map of Tamar Area



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