ENVIRONMENT AGENCY

FIRST ANNUAL REVIEW

OF THE

FRESHWATER TAMAR AND TRIBUTARIES

CATCHMENT MANAGEMENT PLAN

(1997)

EA-South West LEARS/99

FRESHWATER TAMAR CATCHMENT MANAGEMENT PLAN

FIRST ANNUAL REVIEW: APRIL 1996 TO MARCH 1997

CORNWALL AREA ENVIRONMENT PLANNING

MAY 1997

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VISION FOR THE CATCHMENT

Our vision for the catchment was first published in the Freshwater Tamar Catchment Management Plan Consultation Report and ratified in the Action Plan.

Most societies want to achieve economic development to secure a better quality of life, now and in the future. They also seek to protect their environment now and for their children. Sustainable development tries to reconcile these two objectives - meeting the needs of the present without compromising the ability of future generations to meet their own needs. To achieve this judgements have to be made about the weight to be put on different factors in particular cases. Sometimes environmental costs have to be accepted as the price of economic development but on other occasions a site, or an ecosystem, or some other aspect of the environment has to be regarded as so valuable that it should be protected from exploitation.

The Freshwater Tamar and Tributaries Catchment is a high quality environment which has suffered relatively little harm from development. However one of the early industries which brought prosperity to the area - mining - has left a legacy of contaminated drainage which continues to affect rivers in the catchment. Agriculture has had significant impact on the catchment, with extensive land drainage affecting flows, habitat and water quality. With large numbers of livestock, particularly dairy herds, within the catchment the risk of pollution incidents is high.

The catchment is significant in regional terms for providing public water supply from Roadford reservoir, via the River Tamar to Gunnislake.

Today the Agency's role is to recognise what environmental features are important in the catchment and ensure that developments do not cause unacceptable damage to them

In practice we achieve environmental sustainability by setting limits of acceptable environmental change. Some of the activities which are described in the tables in this Action Plan outline our role in setting these limits - particularly in the field of water quality management.

The Agency's vision for the Freshwater Tamar and Tributaries Catchment is towards a future where:

- there is minimal *compromise* of water quality, quantity and physical structure of the water environment to facilitate development of the area
- the aquatic biodiversity of the catchment is maintained and extended
- improvements continue to be made to existing discharges, meeting appropriate standards
- an agricultural and forestry system develops which reduces the risk of diffuse pollution and improves the physical habitat of rivers and wetlands for wildlife
- peoples' enjoyment and appreciation of the river system continues to grow
- there is minimal risk to people and property from flooding
- development of public water supply is managed to minimise environmental impact.

1 INTRODUCTION

This is the First Annual Review of the Freshwater Tamar Action Plan which was published in 1996. It introduces the Environment Agency, summarises progress made with actions and introduces a new biodiversity action. Previous publications relating to this catchment contain more background detail, and this Review should be read in conjunction with these publications:

- Freshwater Tamar Catchment Management Plan Consultation Report - September 1995
- Freshwater Tamar Catchment Management Plan Action Plan - March 1996

1.1 The Environment Agency

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

We provide a comprehensive approach to the protection of the environment by combining the regulation of air, land and water into a single organisation. We cannot work in isolation, but seek to educate and influence individuals, groups and industries to promote best environmental practice, and develop a wider public awareness of environmental issues.

Our Vision is :

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

We will :

- *protect and improve the environment as a whole by effective regulation, by our own actions and by working with and influencing others*
- *operate and consult widely*
- *value our employees*
- *be efficient and businesslike in everything we do*

Our Aims are :

- *to achieve significant and continuous improvement in the quality of air, land and water, actively encouraging the conservation of natural resources, flora and fauna*
- *to maximise the benefits of integrated pollution control and integrated river basin management*
- *to provide effective defence and timely warning systems for people and property against flooding from rivers and the sea*
- *to achieve significant reductions in waste through minimisation, re-use and recycling and to improve standards of disposal*
- *to manage water resources to achieve the proper balance between the needs of the environment and those of abstractors and other water users*
- *to secure, with others, the remediation of contaminated land*
- *to improve and develop salmon and freshwater fisheries*
- *to conserve and enhance inland and coastal waters and their use for recreation*
- *to maintain and improve non-marine navigation*
- *to develop a better informed public through open debate, the provision of soundly based information and rigorous research*
- *to set priorities and propose solutions that do not impose excessive costs on society*

We do not cover all aspects of environmental legislation and service to the general public. Your local authority deals with all noise problems; litter; air pollution arising from vehicles, household areas, small businesses and small industries; planning permission (they will contact us when necessary); contaminated land issues (in liaison with ourselves); and environmental health issues.

1.2 The Environment Agency and Catchment Management Planning

Catchment Management Plans (CMPs) produced by the NRA will continue to be called CMPs, and subsequent reviews will focus mainly on water related issues. This will be the case with this First Annual Review of the Freshwater Tamar CMP.

Any actions previously attributed to the NRA have now been taken over by the Environment Agency.

New plans published after 1 April 1996 by the Agency will be known as *Local Environment Agency Plans* (LEAPs) and these will take account of all Agency responsibilities. All CMPs will be replaced by LEAPs by December 1999.

2 PURPOSE OF THE ANNUAL REVIEW

An important part of the CMP 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 catchment. This report summarises the progress made since the publication of the Freshwater Tamar Action Plan in March 1996.

3 STEERING GROUP

The Steering Group represents a range of commercial, local authority and environmental interests who endorse the Consultation Report and Action Plan prior to public release. They 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 help to promote and develop initiatives of benefit to the environment within the catchment. The Catchment Steering Group are:

	Representing
Mr N H Burden	*AEG, North Cornwall District Councillor*
Mr M Daw	*Ambrosia Creamery*
Mr G Dollard	*Tamar & Tributaries Fishing Association*
Mr E R Gill	*NFU*
Ms M R Lane	*Devon Wildlife Trust*
Mr J Perry	*Riparian interests*
Major J H Piper	*Tamar & Tributaries Fisheries Association*
Mr M Stanbury	*RFDC*
Mr R B Treleaven	*Launceston Anglers Association*
Mr C Underwood	*South West Water Services*
Mrs A Voss-Bark	*Tamar & Tributaries Fisheries Association*

4 SUMMARY OF PROGRESS

In addition to the specific actions that follow we carry out routine monitoring in the catchment and our day to day activities include determining consents and licenses and giving advice to all who request it.

The Effect of Abstractions and Water Supply

Roadford reservoir is used to store water for public supply to Plymouth, South Hams and large areas of North Devon. Water is released from the reservoir for abstraction downstream at Gunnislake on the River Tamar as well as being abstracted directly from the reservoir for supply to North Devon. The management of this reservoir and other abstractions has an impact on the natural water environment. These impacts can be minimised by successful implementation of Operating Agreements. A review of the Roadford Reservoir Operating Agreement has been undertaken. The new Operating Agreement comes into force

in April 1997. This will ensure conservative use of resources within the zone during dry periods and allow for optimisation of surplus resources at other times.

Public water supply abstractions account for the largest consumptive use of water by volume in the catchment. The following table highlights issues and actions which address the need to meet future demand. There is not likely to be a shortfall in available resources, even given a moderate increase in demand, until after 2014. This shortfall should not occur any sooner providing demand is managed, SWW operate their sources efficiently and they reduce leakage to economic levels.

The catchment currently has a surplus of licensed resources and the 1995 drought has not altered our view that this is still the case. However the drought did identify the need for capital investment by SWW to fully utilise existing resources; for instance, by improving water treatment capacities, the distribution system and reducing the level of leakage in certain areas. Opportunities for improved conjunctive use are also being investigated which together would reduce the need for potentially environmentally damaging Drought Orders during similar conditions as experienced in 1995.

Drought Orders

South West Water applied for a Drought Order on 29 December 1995 to abstract 40Ml/day from the River Lyd at Lifton, and 20Ml/day from the River Thrushel at Hayne Bridge to assist the refilling of Roadford Reservoir. The Order came into force on 27 January 1996 and expired on 26 July 1996. The yield of the scheme helped secure public water supplies for 1996 but is now no longer authorised.

We have concerns about the long-term environmental impacts of such a scheme. Further justification would be required before this arrangement could be made permanent.

In 1996 surveys were carried out above and below the S.W.W.Ltd abstraction points installed on the Rivers Lyd and Thrushel. Preliminary results show no significant impact on salmonid populations around the abstraction on the R. Lyd. However, a decrease in population densities was observed below the Abstraction point on the R. Thrushel. A fisheries report on the subject is being produced and will be available.

Future Flood Alleviation Schemes

There are no schemes currently identified in the Medium Term Capital Programme. There is an ongoing review of the results of initiatives such as the Section 105 and Asset Surveys to identify areas at risk from flooding for which a flood alleviation scheme might be a viable option. Before any such scheme can be progressed it would have to be justified on cost/benefit grounds prior to a recommendation to the Regional Flood Defence Committee for promotion. The timing of these works is dependent upon availability of funding, detailed consultation with landowners affected by the proposals and other interested bodies takes place well in advance of any work taking place.

Flood Warning

Since 1 September 1996, we have undertaken the lead role in passing flood warnings to people who are at risk, so that they can take action to protect themselves and their properties. Flood warnings are issued for areas where there is a known risk of flooding from main rivers and where we have level information upstream of the risk location.

A leaflet, *Flood Warning Information for the Upper Tamar Catchment* is available from the Agency. This lists the stretches and locations for which flood warnings are issued and defines the types of warnings.

We issue warnings to the Police, local authorities, and in places directly to those at risk via a recorded telephone message. Flood warnings are also broadcast by most local radio stations, and information on the general situation is available on Teletext. Our Floodcall telephone service (0645 88 11 88) provides regular updated information on flood warnings in force across England and Wales. . A leaflet, 'Floodcall, your quick dial code', is available from the Agency and informs users how to get local information rapidly.

Flood warning is not an exact science; we use the best information available to predict the possibility of flooding, but no warning system can cover every eventuality. It is the responsibility of those who live in

flood prone areas to be aware of any risk and to know what action they should take to protect themselves if flooding occurs.

Warnings are issued for flooding from most major rivers and the sea. There are other types of flooding for which a warning service cannot be provided, for example, flooding caused by blocked drains and culverts.

Pollution Prevention

Farms, trade premises and sewage treatment plants have been visited as part of a risk assessment investigation. Co-operation by the owners of the sites has resulted in good progress being made in reducing the risk of pollution from all sectors. Small farm pollutions have also been addressed.

Small Brook Project

The Smallbrook project is investigating any link between poor water quality and agricultural activity. Water quality, flow and weather station monitors throughout the catchment are relaying valuable information to our offices, which together with our field work is giving us a better understanding of the pollution problems in the Upper Tamar. The ground work of this project will end in June 1997 after which a report will be produced.

Compliance with River Quality Objectives

Fourteen stretches are showing improvements in classification, including 2 stretches achieving Long Term RQOs.

Four stretches significantly failed their RQOs using 1994-96 data. The cause of the failure on the River Tamar above Tamar Lakes has been identified, action taken and the problem resolved. The stretch below Lower Tamar Lake was affected by algae. Reason for failure on Derril Water is unknown although there is indication that some samples were taken at times of spate and readings have improved during 1996. The fourth stretch on the Small Brook is being investigated as part of the Small Brook Project.

One stretch on the Colesmill Stream significantly failed its long term RQO. We consider this to be caused by diffuse agricultural runoff at times of exceptionally high rainfall.

A further 12 stretches marginally failed due to Biochemical Oxygen Demand (BOD). Following examination of the data the high values were recorded at times of exceptionally high rainfall and that there is no underlying upward trend.

Biodiversity

The Agency is the contact point nationally for 12 species and habitats which have been defined by the UK Biodiversity Steering Group. The Agency is signed up as the co-ordinating body for Rivers and Streams, Floodplains, Reedbeds, Grazing Marsh (English Nature co-lead), Southern Damsel Fly*, Otter*, Water Vole* and Atlantic Salmon. There are others not believed to exist in this LEAP area. The Agency has been assigned nationally as the contact body for those species marked *. Biodiversity Action plans will be produced for these species and habitats, and the Agency will be involved in drawing up these plans. More research is required to determine which of these species are present within the catchment, although some data has already been collected. The actions will be incorporated into Action Plans, although many of the actions will be covered by standard Agency duties. We will also be taking an active role in helping maintain and improve other habitats and species for which we are not the contact point such as lowland heathland, lowland farmland, cirl bunting and greater horseshoe bat. The Agency does become involved with some of these, an example being through the regulation of spreading of waste to land. We will continue to develop our database of all species and habitats, whether water related or not, continue to have a high regard for these key biodiversity features and increase staff awareness of reporting presence of key species. We will continue to liaise with the relevant external organisation whenever necessary, but we will not be responsible for developing Biodiversity Action Plans for these particular species and habitats.

The lists of species and habitats do not take into account the degree of threat to each within this specific catchment. There is an urgent need to review the lists, in conjunction with other conservation organisations, in order that more urgent actions are targeted as soon as possible.

Otters have returned to the catchment in significant numbers, following their major decline in the 1960s and 1970s. Maintaining this recovery is a priority for us in our role as species contact point under the biodiversity initiative. This process has begun, but will become more focussed on completion of the species and habitat audits.

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

Riparian birds such as sand martins and kingfishers have high popular appeal; they are vulnerable to loss of nest sites as a result of erosion control works to rivers, as well as adverse conditions either here or in wintering areas. Concern has been expressed at changes in the population and we need to monitor 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.

We are committed to maintaining and improving the biodiversity of the Freshwater Tamar catchment and will be working collaboratively with other involved groups, eg English Nature, RSPB, Local Planning Authorities and the Devon and Cornwall Wildlife Trusts.

Actions concerned with protection and enhancement of the riparian strip and wetland habitats will be focussed for action through this new issue.

Salmon Action Plan

Salmon Action Plans are a national Agency initiative which will enable us to manage stocks. A draft Salmon Action Plan has been drawn up for the River Tamar. The consultation process will begin in Summer 1997. Actions in the CMP Action Plan have been amalgamated into the Salmon Action Plan.

Development

Through planning legislation the Agency aims to protect and enhance the environment so as to make a positive contribution towards sustainable development. We work closely with local Planning Authorities to seek sympathetic development with the environment. However, in certain situations , such as deficient sewerage and/or sewage treatment services or severe flood risk, the Agency will recommend formal development restraints.

Sustainable development does not mean environmental protection at all costs. It involves finding ways to encourage environmentally compatible economic activity and discouraging or controlling environmentally damaging activities.

Waste Management

Since the publication of the Action Plan the Agency has taken over responsibilities for the enforcement of waste regulation in the UK. Appendix 6.4 gives a brief overview of our work in this area. No waste management issues and actions have been identified in this catchment except licensing and enforcement which is part of our routine work.

Waste spreading to land

Increased waste spreading to land was raised in the Consultation Report as a potential future issue. Within the past year there have been significant new areas of land in the catchment used for spreading waste. In some cases this has caused physical damage to important wildlife sites through field drainage prior to waste spreading. We are also concerned about longer term effects as the catchment is already intensively

farmed. This is an issue that we feel needs reviewing in a comprehensive and integrated way to ensure that the activity does not cause undue impact. Such a review will involve landowners, spreaders, MAFF and other interested parties.

Integrated Pollution Control (IPC)

In April 1996 the Agency became the statutory authority in England and Wales for regulating the largest and most complex industrial processes which discharge potentially harmful substances to air, water and land. To do this we use a system known as Integrated Pollution Control (IPC). Appendix 6.1 gives an overview of our responsibilities. No IPC issues and actions have been identified in this catchment area except ongoing routine enforcement of authorisations.

5 ACTION PLAN MONITORING REPORT

The Action Plan is the means by which the vision of the catchment is turned into reality and outlines detailed proposals for resolving the issues identified. The following tables update the progress with issues identified in the Freshwater Tamar Catchment Management Plan Action Plan for the period April 1996 to March 1997. The tables also report on a new biodiversity issue raised since publication of the Final Report.

Issues & Actions	By	Cost	96	97	98	99	0	Future	Progress Year One
The effect of agricultural activity on water quality - non-compliance with EC Freshwater Fish Directive at Buses Bridge									
1.4.1 Investigations to identify sources	Agency	4k	o						Source has been identified. Improvement works have been done and no further failure has taken place. Monitoring continues.
The effect of local geology/ abandoned mines on water quality - Exceedance of Freshwater Fish Directive standard for total zinc at Two Bridges on Penpont Water									
2.1.1 Investigate sources	Agency		o						The failure occurred on 31 October 1991 when the river was in spate. Since then there have been no failures against this standard. No further investigations . Action complete. Routine Directive monitoring continues
The effects of agricultural activity on water quality - marginal non-compliance with RQO									
1.1.1 Investigate causes of RQO failure and follow up action	Agency		o	o	o	o	o	o	Action ongoing. See report on RQO compliance (page 5).
1.1.2 Undertake work to achieve compliance by 1998 on stretches of: River Tamar, River Thrushel, River Inny, Bolesbridge Water	Agency	8k	o	o					Work in progress, many farms visited during the period. River Thrushel, River Inny and Bolesbridge Water are now compliant.
1.1.3 Investigate links between agricultural activity and wet weather deterioration in water quality in a sub-catchment	Agency	20k	o						Action ongoing. See Small Brook report (page 5)
Effect of local geology/abandoned mines on water quality - inputs of metals from abandoned mines and waste tip sites									
2.4.2 Investigate sources/ component loads	Agency	33k	25k	8k					Monitoring has been carried out during 1996/97 to establish loadings from principal sources to the lower Tamar Catchment. Fieldwork is intended to finish at the end of March 1997. An interim report has already been produced and a full report is in preparation.

Issues & Actions	By	Cost	96	97	98	99	0	Future	Progress Year One
High loads of Annex 1A substances in River Tamar at Gunnislake									
3.1 Actions to reduce certain Annex 1A substances may be required	Agency								Nationally significant loads of metals and organic compounds have been recorded at Gunnislake, however only copper and TBT were in concentrations above their EQSs. Metals are due to old mine workings and abandoned mines. We can take no action to reduce inputs. We are currently cataloguing the various mining inputs to the Lower Tamar. See also 2.4.2 above. Annex 1A organic compounds appear to be diffuse in origin and , apart from TBT, are present in concentrations below their EQSs (see 3.1.1 below). Although the EQS for TBT is only occasionally exceeded, inputs of TBT to the catchment require further investigation. No further action is required for other Annex 1A substances.
3.1.1 Desk top study to investigate sources of substances within the catchment	Agency	30k	30k	0k					Four intensive chemical surveys have been carried out to identify sources of organic Annex 1A substances that are contributing to the loadings at Gunnislake. A report (Ref) *COR/96/010* has been issued. Some organic Annex 1A substances are found throughout the Tamar catchment but in low concentrations ie below their EQSs. The exception is TBT (see 3.1 above)
High levels of biocides in the River Tamar at Gunnislake									
40.1 Investigate sources of high loads of organic substances. (May also feed into 3 above)	Agency	41.5	o						Investigations have been carried out in parallel with 3.1.1. above. No significant inputs were identified and concentrations were within standards. High loading values are a result of large flows. No further individual reporting.
Trophic Status of Tamar Lakes									
4.1.1 Review reservoir operation	Agency/ SWW								Incorporated into 7a.2 as part of Roadford Supply Area. No further reporting - action deleted
4.1.3 Investigate nutrient status	Agency	37k	5k	12k	20k				Monitoring has continued at the sites in the routine programme during 1996. It is proposed to increase operational monitoring for the period April 1997 to March 1998 to cover the two major inputs to the lake. Surface, mid-depth and bottom samples from the lake and profiling will be undertaken. Algal samples will be collected to monitor and identify the development of any blooms. The data will be analysed in 1998.

Issues & Actions	By	Cost	96	97	98	99	0	Future	Progress Year One
Operation and development of Roadford Reservoir within the Roadford Strategic Supply Zone									
7a.1 Model Roadford Strategic Supply Zone	Agency/ SWW	20k	o	o	o				Water Resources planning model of Roadford Strategic Supply area completed. Used to revise operating agreement and develop operating manualAction completed - no further reporting
7a.2 Review Roadford Scheme operating rules and revise operating agreement as necessary	Agency/ SWW	15k	o	o					Revised Operating Agreement agreed with SWW effective from 11 February 1997. Development of operating manual to be completed and agreed by April 1997.
Impact of Roadford Reservoir and Gunnislake abstraction on the Tamar catchment									
7b.1 Review and revise as necessary the Agency position statement for the Roadford Investigations	Agency/ SWW	15k	o	o					Incorporated into 7a.2. Action deleted - no further reporting.
7b.2 Full review of fisheries data and report to Roadford Fisheries Liaison Committee	Agency		o						The report is complete and has been presented to the Roadford Fisheries Liaison Committee. The report concludes that following analysis of 10 years of fish tracking data the prescribed flow at Gunnislake intake can revert to the original licensed prescribed flow with no detriment to the fishery. This took place on 19 April 1996. No further reporting - action deleted.
Future demand for water in the Roadford Strategic Supply Zone									
37.1 Manage demand	SWW/ Agency	5k Agency	o	o	o	o	o		Part of routine monitoring. Demand management involves a number of options including metering and efficient water use. We encourage metering of all new domestic properties and selective metering of properties where resources are under stress. Routine actions- no further reporting
37.2 Control leakage	SWW/ Agency	10k Agency	o	o	o	o	o		
37.3 Review and revise an Operational Management Strategy (OMS) for Roadford Strategic supply zone (Resource management)	Agency/ SWW	10k Agency							Incorporated into 7a.2. No further reporting - action deleted
37.4 Review potential for Roadford Pumped Storage Scheme (Resource development)	Agency/ SWW	5k Agency	o	o					Review ongoing in light of recent temporary pumped storage under Drought Permit in 1995.

Issues & Actions	By	Cost	96	97	98	99	0	Future	Progress Year One
Lack of knowledge of ecological flow requirements									
8.1 Complete national R&D study entitled 'Ecologically Acceptable Flows', Phase 2.	Agency	471k whole project	o						The output from this R&D is being applied to those rivers where the methodology is most appropriate. There are no sites in this catchment.
8.2 Consider R&D results when available and if appropriate apply to the Tamar catchment	Agency (abstractors)	5k		o	o	o	o	o	Action 8.2 is no longer relevant. No further reporting - delete action.
Low flows downstream of Lower Tamar Lake									
9.1 Audit compensation flow from Upper Tamar lake and monitor outflow from Lower Tamar Lake	Agency/ SWW	10k Agency	o	o	o	o	o	o	Compensation flow audited and compliance achieved. Now part of routine work - no further reporting. Check-gauging of outflow carried out throughout year and will continue through 1997.
9.2 Monitor juvenile salmonid production	Agency/ SWW	3.6k Agency	o	o	o	o	o		Surveys carried out as planned. Data being analysed, report due in Summer 1997.
Management of Lower Tamar Lake water levels									
10.1.2 Lower the level of the lake and carry out mitigation works	SWW	U	o						Repairs underway. Water level will not be lowered in the medium-term.
The development of recreational paths									
25.1 Complete NRA water based recreation survey	Agency	1.6k	o						NRA survey done. The results of the survey were inconclusive and it will not be repeated. Action complete - no further reporting.
25.2 Develop the Tamar Trail	County & District Councils	U		o	o	o	o		No action to date. We will provide technical advice for feasibility study if and when required.
25.3 Develop and restore the Bude Canal	Bude Canal Trust Ltd	U	o	o	o	o	o		We have provided technical advice to BCT and commented on their Restoration and Management Strategy proposal.
Promote the responsible use of the River Tamar by canoeists									
26.2 Promote implementation of access agreements. Undertake infrastructure improvements for access									Access agreement has been signed. Action complete - no further reporting.
Assessment and Improvement of the natural fishery									
14.2 Assess benefits of habitat improvement schemes	Agency	10k	o						A MSc student undertook an assessment in summer 1996. Report will be published inSummer1997, available from Agency.
14.3 Determine the maintenance for existing habitat improvement schemes	Agency	10k							Following the completion of the report in Action 14.2, a maintenance scheme will be proposed as appropriate.

Issues & Actions	By	Cost	96	97	98	99	0	Future	Progress Year One
14.4 Carry out maintenance and further work as appropriate following 14.2 and 14.3									
Decline in catch of spring salmon									
15.1 Contribute to the national investigation into the the problem	Agency	2k	o	o	o	o	o		This action is covered by forthcoming River Tamar Salmon Action Plan, to be published 1997 (see page 6)
15.2 Continue monitoring; fish counter/ fish scale analysis/ rod and net catches	Agency	5k	o	o	o	o	o	—	Fish counter operational, see action 16.2 below. We still need fish scales to be sent in by anglers. A national byelaw came into force on 14 March 1997 requiring rod and net catch returns to be made to the Agency.
15.3 Investigate possible byelaws to increase escapement of spring salmon	Agency	5k							Covered by forthcoming River Tamar Salmon Action plan to be published 1997 (see page 6)
Decline in sea trout catch									
16.1 Contribute to the national investigation into the decline of sea trout	Agency	U							Ongoing provision of data. Sea trout Action Plans are to be written following completion of the Salmon Action Plan programme commencing 2001.
16.2 Utilize Gunnislake fish counter to assess changes in the adult population	Agency	35k	o	o	o	o	o		The fishcounter is working well. A report on 1996 data is in preparation and will be available from the Agency. The fishcounter has now provided 3 years of baseline data, showing healthy stock numbers passing the counter at times of the year they are expected.
16.3 Scale reading to investigate adult population trends in stock components	Agency	1k	o	o	o	o	o		We need anglers to send in fish scales.
16.4 Continue monitoring of rod catches in relation to environmental factors	Agency	1k	o	o	o	o	o		Ongoing. The data has been used in the determination of Tamar, Tavy and Lynher Net Limitation Orders recommended to MAFF.
Introduction of non-native fish species									
18.1 Update database on distribution of non-native species within still water fisheries	Agency	20k							No resources at present. Investigating an in-house project following computer training. Costs would be significantly reduced.
18.2 Regular inspections of still water fisheries	Agency	Core							Routine work incorporated into other duties. Delete action.
Poor salmonid densities and recruitment									
19.1 River Wolf - continuation of Roadford Environmental monitoring	Agency			o					Electric-fishing surveys planned for June 1997

Issues & Actions	By	Cost	96	97	98	99	0	Future	Progress Year One
Investigate possible causes and remedial work on: 19.2 River Claw 19.3 Upper Henford Water 19.4 Luckett Stream 19.5 Ogbeare Stream									No resources available at present
Obstacles to fish migration									
20.1 Virginstow Ford on the River Carey. Investigate the scale of the problem and possible remedial work									Westcountry Rivers Trust have shown interest in taking on issue and finding a solution
Insufficient knowledge of eel populations									
34.2 Check eel tissue for the bioaccumulation of toxins 34.3 Improved monitoring	Agency Agency	10k U		o					Our routine work includes collection of data and bioaccumulation studies of eel tissues. In previous years Eel populations have been monitored by recording them as absent, present (<10), common (10-100) or abundant (>100) at survey locations. A more detailed study of eels was incorporated into the 1996 fisheries survey of the Tamar catchment. This involved recording length measurements of individuals at all sites and a bio-mass for some sites. As this is the first year such information has been recorded critical analysis is not possible.The two types of measurement mentioned earlier will be incorporated into all future quantitative fisheries surveys. No separate reporting - action deleted
Requirement to study EC Habitats Directive fish species									
35.1 Assess and report on populations of bullhead, atlantic salmon, brook lamprey, sea lamprey and grayling where possible as part of fisheries programme.	Agency	U		o					Ongoing core work. The presence of these fish has been recorded during routine surveys in past years but, for some species, data has been insufficient to assess populations. From 1997 surveys will record the abundance and distribution of these species to enable assessment and reporting on populations
Protection and enhancement of riparian strip									
11.2 Encourage land owners to protect riparian strip		Core							Buffer zone leaflet produced. No further reporting as separate action
11.3 Restore/ replant riparian strip or wetland		Core							Ongoing core work. Now part of Biodiversity action (No 41), the details of which will be developed in the forthcoming year. No further reporting as separate action

Issues & Actions	By	Cost	96	97	98	99	0	Future	Progress Year One
Protecting and recreating wetlands, especially Culm grassland									
12.1 Complete the inventory of all Cornish Culm grassland	CWT	3k	o	o					The inventory is partially complete. It identifies and lists the total area of this habitat that remains: Further work is planned in 1997. A joint report from North Cornwall District Council Countryside Service and the Agency wil be published in 1997.
12.2 Develop a joint strategy to conserve and enhance areas of conservation importance including Culm grassland									Now part of new Biodiversity action (No 41), the details of which will be developed in the coming year. No further reporting as separate action
Review status of otters in the catchment to ensure its needs are protected									
22.2 Develop an area based strategy for otter conservation									Part of new Biodiversity action (No 41), the details of which will be developed in the coming year. No further reporting as separate action
22.3 Promote Agency/MAFF 'Otter advice for Landowners' leaflet		Core							Ongoing core work. No further separate reporting.
Non-native plant species									
23.1 Take action on river stretches which we annually maintain or give advice on local problems including the use of herbicides. We do not plan to carry out any systematic control in this catchment		Core							Ongoing core work. Some Giant Hogweed has been identified on the lower stretches. We seek to undertake action as part of a larger project identified in the Tamar Estuary & Tributaries Action Plan (Ref) No further separate reporting.
Lack of detailed archaeological information									
24.1 Undertake archaeological assessment in relation to Agency works									No audit planned at this stage.
The need for enhancement of conditions for certain species and habitats									
38.1 Adopt appropriate recommendations from the Rivers and Wetlands Trust Project									Part of new Biodiversity action (No 41), the details of which will be developed in the coming year. No further reporting as separate action
The need to complete the Devon Wildlife Site survey for Torridge and West Devon Districts									
39.1 Complete the survey	DWT	6k	o	o					Work ongoing. Completion expected 1997. A report will then be published by Devon Wildlife Trust. Results will feed into Biodiversity action (No 41). No further separate reporting.

Issues & Actions	By	Cost	96	97	98	99	0	Future	Progress Year One
Fully Integrated Flood Defence Management Manual and supporting system to improve targeting of resources to the greatest needs									
27.1 Develop system	Agency	U	o	o	o	o	o		The manual is now introduced and the system has been installed in the region. Area staff will start to use during 1997. Action complete.
27.2 Undertake regional asset survey	Agency	15k		5k	2k	2k			Baseline due for completion summer 1997
Identification of flood risk to Planning Authorities									
28.1 To provide flood plans for the entire area		63k	15k	8k	15k	20k	5k		Maps showing the indicative flood plains have been produced for this catchment. These will be issued to Planning Authorities during summer 1997.
The need to develop Water Level Management Plans for Brendon and Vealand Fen and at Kingford Fen									
31.1 Develop Water level Management Plans for these sites taking account of the needs of farming, flood defence and wildlife									Low priority. No work commenced.
Need to update Agency database of flood risk locations for potential capital works									
32.1 On completion of Section 105 survey an assessment of the need for further capital works will be made	Agency	U		o	o	o	o		There is an ongoing review to identify flood risk locations for which capital works might be identified.
Improvements to flood warning system									
33.1 Undertake Level of Service study	Agency	15k		o	o				Planned for Tamar Catchment 1997/98
33.2 Install additional flood warning stations on the Rivers Lyd and Kensey	Agency	10k		o					River Lyd station planned for 1997. River Kensey to be included in the level of service study, see 33.1
Construction of inappropriate structures in the river channel									
36.1 Prepare a guidance policy on the design and placement of croys	Agency	3k		o	o				A review of current legislation and procedures for handling applications has been undertaken. We will produce guidelines in 1997/98
NEW ISSUE: Development and Delivery of Biodiversity Action Plans									
41.1 Continue development and implementation of the Biodiversity Action Plan for Devon's Rivers and Wetlands (Devon's RWBAP).	EN, DWT, Agency	U		o	o	o	o	o	The Agency supports BAPs but no new funding can be used at the present time. We will continue to try to secure funding where possible.
41.2 Continue support of the Cornwall Biodiversity Initiative to produce actions specific to the Cornish part of the catchment.	CWT	15k		o					Cost indicated is the total project cost to date to which we have contributed. Report due to be published in early summer 1997 by the Steering Group and will be reviewed periodically.

Issues & Actions	By	Cost	96	97	98	99	0	Future	Progress Year One
41.3 Investigate extent of current and potential floodplain wetlands using Section 105 surveys.	Agency	U		o	o				Our Section 105 surveys will be able to provide much digitised floodplain information. No action to date, awaiting completion of action 28.1.
41.4 Continue production and updating of wildlife inventories.	EN/ RSPB/ CWT/ DWT/ Agency	U		o	o	o	o	o	This would include designation of county wildlife sites in Devon .(See also action 39.1)
41.5 Protection of key species such as otters, sand martins and Southern damselflies.	Agency, Others								Cornwall Dragonfly Group are conducting a survey of Southern Damselflies throughout the Cornish side of the catchment in 1997. Devon Birdwatching and Preservation Society are conducting a county wide survey of sand martins in 1997.

6 APPENDICES

6.1 Integrated Pollution Control

The Agency is the statutory authority in England and Wales for regulating the largest and most complex industrial processes which discharge potentially harmful substances to air, water and land. To do this we use a system known as *Integrated Pollution Control* (IPC).

Two lists of processes have been prescribed by regulations made under the Environmental Protection Act (1990)(Part I): Part A processes are controlled under IPC by the Agency, and operators of these controlled processes are required to have an authorisation. Authorisations also cover plant design and operation. The Agency is required to ensure that the *best available techniques not entailing excessive cost* (BATNEEC) are used to prevent release of particular substances into the environment or where not practicable to minimise their release and render them harmless. Where a process is likely to involve releases into more than one medium, we ensure that the BATNEEC principle is used to ensure that the *best practicable environmental option* (BPEO) is adopted. Consideration of BATNEEC and BPEO are, primarily, site specific.

Part B processes are controlled at a local level under a system of Local Authority Air Pollution Control (LAAPC).

Under the Water Industry Act 1991, referrals of special category effluent for discharge to sewer from processes which are not subject to IPC are managed by the Agency on behalf of the Secretary of State for the Environment.

There are no Part A processes in the catchment.

6.2 Air Quality

Air quality is an indicator of environmental quality; poor air quality can damage flora and fauna and buildings, and have significant effects on soils and water. Some pollutants. such as acidic gases, can also cause serious problems for those with asthma, bronchitis and other respiratory diseases.

Air pollution may be in the form of gas or particulate matter with its dispersion and dilution depending on climatic conditions. Its impact may be local, especially with regard to particulate matter which will often settle on nearby land or water, or may be global, for example, some refrigerant gases depleting the upper ozone layer, or affecting concentrations of greenhouse gases such as carbon dioxide.

The Agency will need to work closely with others if improvements are to be achieved. This is particularly important with regard to local air quality where the Agency is only one of a number of regulatory bodies, with a role in helping to achieve the governments air quality strategy.

The work of the Agency also involves authorising and regulating emissions to air from certain prescribed processes (Part A processes) under Part I of the Environmental Protection Act (1990), and regulating landfill sites and in particular landfill gas. This gas is principally a mixture of methane and carbon dioxide.

Under Part 4 of the Environment Act 1995, the Government is required to publish a national strategy for air quality including :

- *a framework of standards and objectives for the pollutants of most concern*
- *a timetable for achieving objectives*
- *the steps the Government is taking and the measures it expects others to take to see that objectives are met*

The strategy was published for consultation in the summer of 1996. The Agency will work closely with local authorities to help achieve the objectives of the National Air Quality Strategy.

In due course, air quality standards may be prescribed in regulations made by the Government and obligations placed on local authorities regarding the establishment and operation of local air quality management areas. Local authorities will have to carry out periodic reviews of air quality in their areas. Where standards are not being met or are not likely to be met an air quality management area should be declared, known as a *Designated Area*, and an action plan produced to improve air quality.

Cornwall Air Quality Forum

The Cornwall Air Quality Forum has been formed as one of 14 pilot study areas nationwide. It is lead by Carrick District Council and has representation from all local authorities in the county and the Agency. The Forum has been funded by the government to

- review and assess government guidance on air quality strategy, its appropriateness, requirements and applicability. They intend to do this through producing a strategy

- carry out assessment of monitoring techniques for PM10s (dust) at a china clay quarry site.

A contract has been let to complete this work by September 1997.

6.3 Radioactive Substances

The Agency is the principal regulator in England and Wales under the Radioactive Substances Act 1993. This statute is concerned with the storage, use and disposal of radioactive substances, and in particular, the regulation of radioactive waste.

The Agency regulates the accumulation, keeping and use of radioactive materials, and the disposal of radioactive material, including that from licensed nuclear sites. *Certificates of registration* are issued for keeping and using radioactive materials and *certificates of authorisation* for the accumulation and disposal of radioactive waste.

6.4 Waste Management

It is the responsibility of the Agency to enforce the majority of UK waste legislation which governs the management of waste generated from household, commercial or industrial sources. Where this waste is regarded as particularly hazardous it is categorised as *special* waste and becomes the subject of a strict tracking procedure, under the Special Waste Regulations 1996, to ensure that it is disposed of at an appropriate site.

Waste from agricultural premises and wastes arising from mines and quarries is not classed as controlled waste at present and is therefore not the subject of regulation by the Agency. Consideration is currently being given by the DoE into bringing these wastes within the definition of controlled wastes and therefore under the scope of Agency control.

The aquatic environment may be affected by surface water becoming contaminated as it flows over or near a site. Alternatively the ground within the site may become contaminated by the waste management activities and in turn any water percolating through the ground or the waste may pick up contaminants producing leachate.

Biodegradable wastes breaking down under anaerobic conditions will produce landfill gas, which is made up of a combination of methane and carbon dioxide with trace amounts of other organic gases and vapours. In enclosed spaces it may be an asphyxiant and poses an explosive risk. Additionally, because of its methane content it is a strong greenhouse gas.

There is a potential problem from odours or the escape of wastes from waste management sites, for example litter or fumes. A site may also cause nuisance from noise or dust. Local Environmental Health Departments have powers to control this nuisance and we liaise closely with them on these issues.

It is our duty to prevent pollution of the environment, harm to human health or serious detriment to the amenities of the locality from waste management activities. Sites are principally controlled by issuing waste management licences. The licence contains conditions on the construction, maintenance and operation of sites, and stipulate monitoring requirements where we deem it necessary. The environment is protected by appropriate conditions which are agreed internally and circulated to external bodies as a consultation exercise prior to the issue of a licence.

Certain activities are now afforded exemptions from waste management licencing by the regulations. In general they are activities with less potential for pollution, and certain waste storage and recycling processes including the spreading of certain wastes on agricultural land for benefit. Such activities are only exempt provided they do not give rise to the risk of pollution.

In the past waste management licences only related to the operational phases of any site and planning permission was the only means by which control could be exercised over closed sites. The introduction of the Waste Management Licencing Regulations (1994) under the Environmental Protection Act (1990) has changed this situation. Licences can now control the monitoring and aftercare of closed sites. Licences cannot be surrendered until the Agency is satisfied that the site does not represent a risk to the environment.

Planning for waste management is undertaken by the :

- *Environment Agency who review current and future waste generation and from this the size and types of management facilities which are required*
- *County Councils and Local Planning Authorities who are required to make provision for sufficient and adequate facilities*

Water Quality Reports

River Tamar EC Freshwater Fish Directive Failure 1994. EA, 1996. COR/96/005

River Tamar Annex 1A Investigation. EA, 1996. COR/96/010

Upper Tamar (Small Brook) water quality project - interim report. EA, 1996. COR/96/011

References

Environment Act 1995, HMSO

Environmental Protection Act 1990, HMSO

Freshwater Tamar Catchment Management Plan Consultation Report, NRA South Western Region, September 1995

Freshwater Tamar Catchment Management Plan Final Report, NRA South Western Region, March 1996

Radioactive Substances Act 1993, HMSO

Tomorrow's Water; Water Resources Development Strategy, NRA South Western Region, April 1995, SW-4/95-1k-B-ANOQ

Waste Management Licencing Regulations 1994, HMSO

Water Industry Act 1991, HMSO

Tamar Estuary and Tributaries Action Plan, EA South West Region, May 1997