

local environment agency plan

RIVER TONE

CONSULTATION DRAFT

DECEMBER 1999



ENVIRONMENT
AGENCY

Foreword

The Environment Agency is a major environmental organisation responsible for regulating waste disposal to land, industrial releases to air, and safeguarding and improving the natural water environment. Our aim of integrated environmental improvement in the Tone contributes to the achievement of global sustainability in accordance with the spirit of the 1992 Rio de Janeiro 'Earth Summit' agreement.

This Consultation Draft sets out what we believe to be the environmental issues in the area together with suggested actions both for ourselves and in partnership with others.

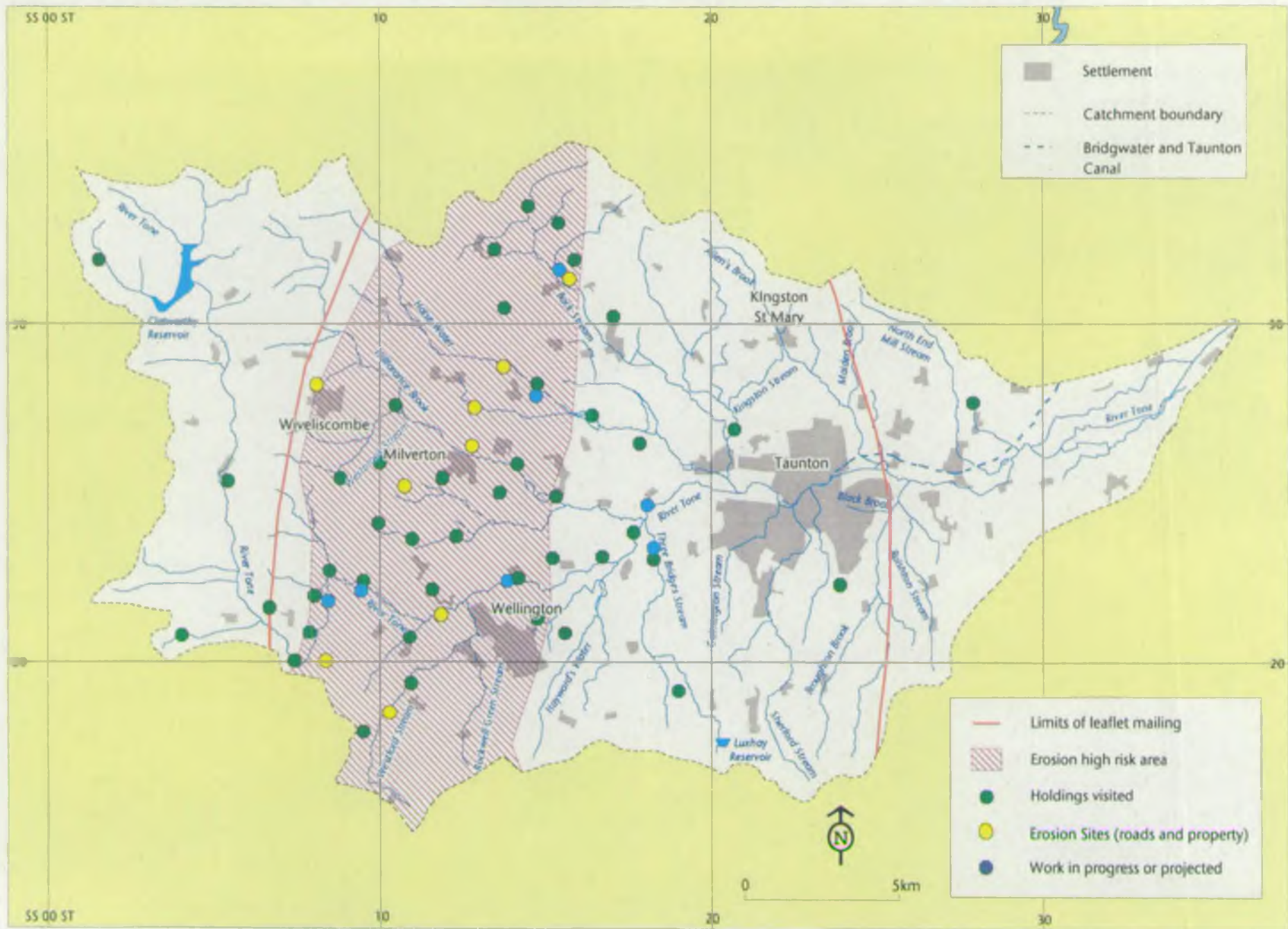
I invite you to read this document, discuss it and then write to us with your views on how to improve it, so that when we re-publish it in summer 2000 we will have the best possible plan for a more environmentally sustainable River Tone.

A handwritten signature in dark ink, appearing to read 'Tony Owen', is written over a horizontal line.

DR TONY OWEN

Area Manager (North Wessex)

Map 1 - Farming and Wildlife Advisory Group Collaborative Project with the Environment Agency



River Tone Action Plan Consultation Draft

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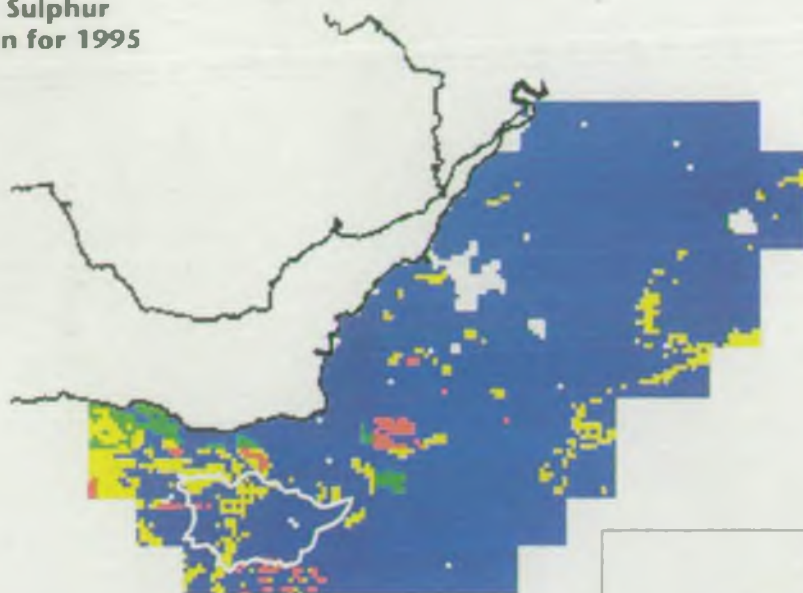
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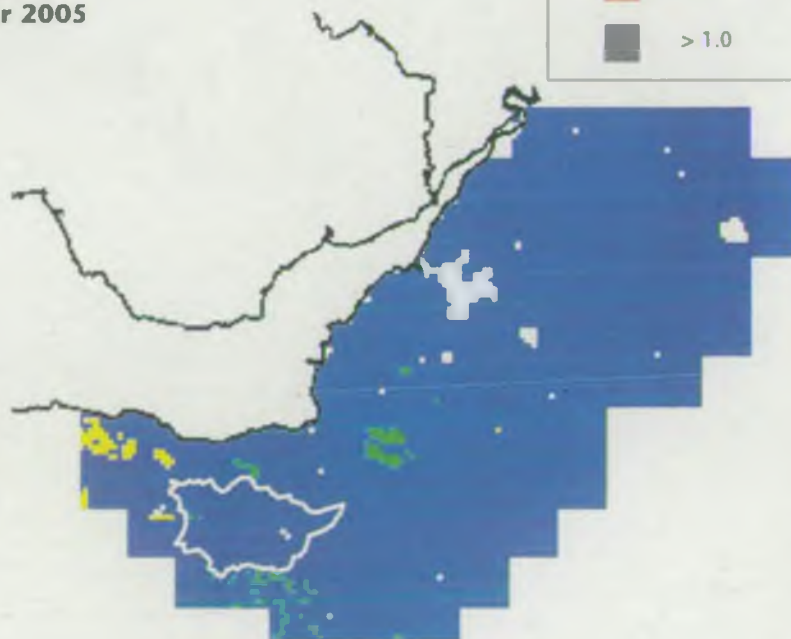
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Note: This is not a legally or scientifically binding document

Map 3 - Exceedences of critical loads of acidity for soils**Modelled Sulphur
Deposition for 1995****Key**

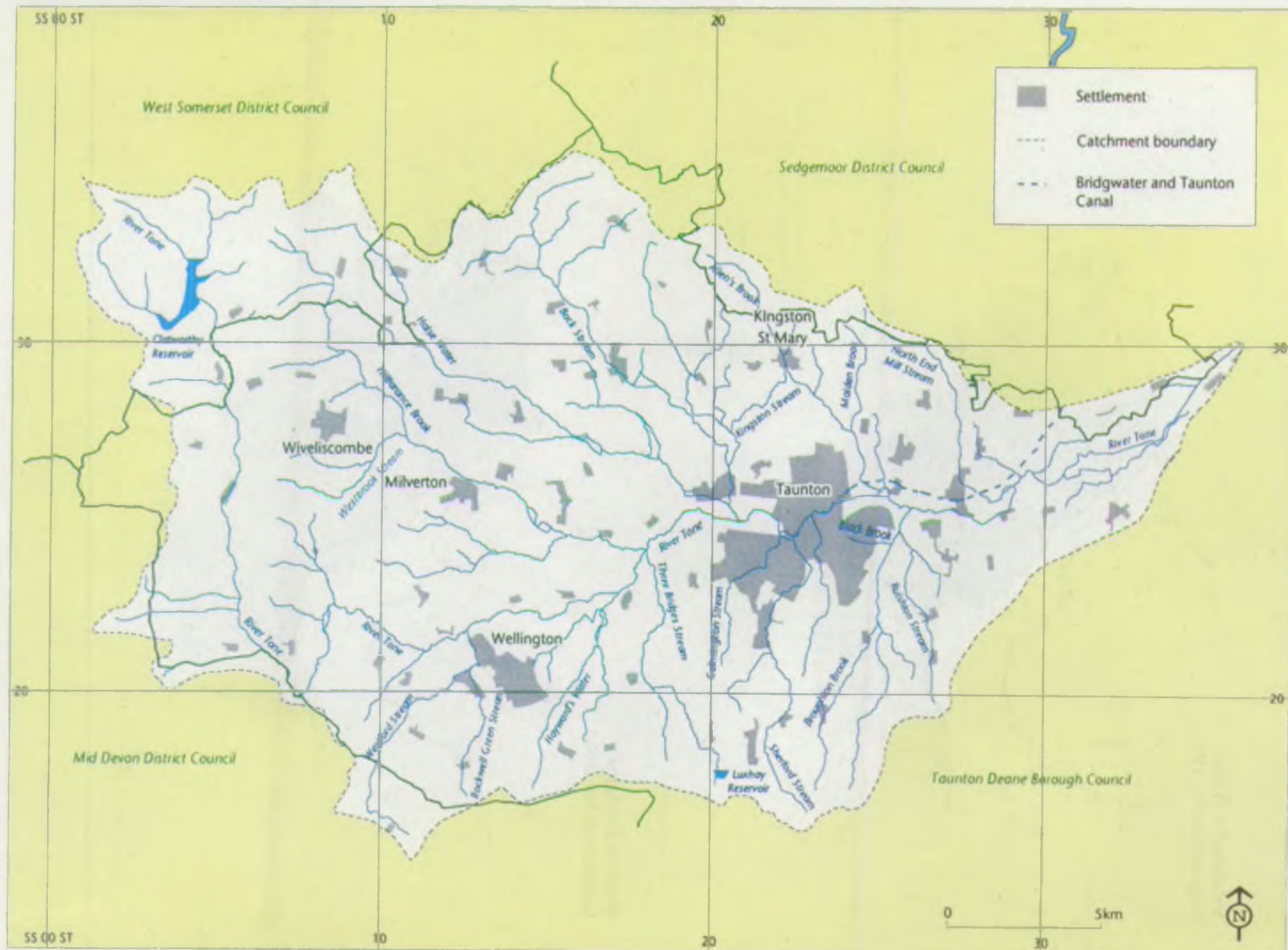
Exceedence (Kilogramme equivalent of
hydrogen ions per hectare per year)

-  Not Exceeded
-  0.0 - 0.2
-  0.2 - 0.5
-  0.5 - 1.0
-  > 1.0

**Modelled Sulphur
Deposition for 2005**

Source: Critical Loads Mapping and Data Centre, ITE Monks Wood - Data acknowledgement: CLAG Soils sub-group, Hull University

Map 2 - The River Tone Catchment





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1. Introduction

1.1 The Environment Agency

The Environment Agency has a wide range of duties and powers relating to different aspects of environmental management. These duties together with those areas where we have an interest, but no powers, are described in more detail in Appendix 5.4. We are required and guided by Government to use these duties and powers in order to help achieve the objective of sustainable development. The Brundtland Commission defined sustainable development *"as development that meets the needs of the present without compromising the ability of future generations to meet their own needs"*.

At the heart of sustainable development is the integration of human needs and the environment within which we live. Indeed the creation of the Agency itself was in part a recognition of the need to take a more integrated and longer-term view of environmental management at a national level. We therefore have to reflect this in the way we work and in the decisions we make.

At a local level the local authorities are the focus for community action to work towards a more sustainable way of life. This is part of the global Local Agenda 21 initiative that we are committed to support.

Taking a long-term perspective will require us to anticipate risks and encourage precaution, particularly where impacts on the environment may have long-term effects, or when the effects are not reversible. We must also develop our role to educate and inform society as a whole, as well as carrying out our prevention and enforcement activities, in order to ensure continuing protection and enhancement of the environment. Our national corporate aims are set out in Appendix 5.2.

Our vision is:

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

1.2 About local Environment Agency plans (LEAPs)

One of the key outcomes of the United Nations 'Earth Summit' held in Rio de Janeiro in 1992 was agreement by governments that, in order to solve global environmental problems, local action is crucial: we must all therefore think globally but act locally. For our part we are committed at the local level to a programme of Local Environment Agency Plans (LEAPs) in order to produce our local programme of integrated action for environmental improvement.

Our LEAP Plans continue the work started by our predecessor organisation, the National Rivers Authority (see Appendix 5.1, Earlier Plans).

LEAPs help us to identify and assess, prioritise and solve those local environmental issues within our remit and related to our functions, taking into account the views of our local customers. As a result LEAPs allow us to deploy our resources to best effect and optimise benefit for the local environment.

The LEAP process involves several stages as outlined below.

LEAP Action Plan Consultation Draft – The publication of the River Tone LEAP Action Plan Consultation Draft marks the start of a three-month period of formal consultation. The purpose of the consultation period is to enable the Agency and all external organisations and the general public to liaise and reach a consensus about the management of the area.

LEAP Action Plan – The final LEAP Action Plan will take into account the results of consultation and views expressed and will be published in summer 2000.

Updating and reviewing this plan – About 14 months after publication of the Action Plan and then every 12 months thereafter we will publish an **Annual Review** to report on the progress in carrying out our planned actions, to both our Steering Group and the wider community. This will also be an opportunity to add new issues and actions as they may arise. **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.**

Many of the actions identified in the National Rivers Authority's Catchment Management Plan have been carried out and some of the original issues have been resolved. Details can be found in the River Tone Annual Review (June 1998). Unresolved issues and incomplete actions have been transferred to this LEAP.

It will contain a list of actions identifying partner organisations, and where possible identifying estimated costs and time-scales. These actions will be prioritised along with all the actions from our other LEAPS, taking account of costs and benefits. Those actions which we are committed to carrying out in the first year of the 5-year Plan Period will be identified in our Annual Area or Regional Business Plans. This process will be repeated each year.

1.3 Earlier consultation

In April 1999 we wrote to 113 organisations and individuals and invited them to give their views on what should go in this plan.

Then on the 21 May 1999 we held an Issues Forum when invited representatives of our key customers met for a day to discuss the environmental issues in the River Tone area and start the process of working more closely together on their resolution.

Additionally we have set up a River Tone LEAP Steering Group (a voluntary, advisory body) to help us produce this Plan. The membership of individuals and organisations reflects as many interests in the area as possible. A list of members and the interests they represent can be found in Appendix, 5.14. This group met on 10 September 1999 to discuss improvements to the plan, and will meet again to discuss the amended plan following the public consultation period.

1.4 What we want from you

We now want everyone with an interest in the River Tone environment to read this plan and write to us with answers to the following questions:

- **Is the information in the plan accurate?**
- **Have we identified all the issues? If not, what are the new issues?**
- **What are your priorities for the issues raised?**
- **Are there any other viable actions to resolve the issues?**
- **Can you or your organisation contribute partnership funding, technical advice or other resources to enable any environmental enhancement projects to go ahead?**
- **If you are part of an organisation working in, or using, the environment can you suggest ways of improving liaison with us?**

Privacy Note - The information that you supply in response to this consultation will be processed by the Environment Agency to fulfil its regulatory and monitoring functions.

A summary may be made available to the public and the applicant (this will include your name and address) unless you specifically request otherwise, or indicate that your response is confidential. If you would prefer the full content of your response to be made available please indicate this in your response.

Individuals have a right to see information we hold about them. We will correct the information if it is inaccurate.

1.5 The River Tone catchment

The River Tone catchment covers an area of approximately 414 km². The river rises in the Brendon Hills near Raleigh's Cross. From its source to the confluence with the River Parrett it is about 33 km long and falls approximately 370 metres. Downstream of its source, the Tone enters Clatworthy Reservoir. From the reservoir, the river runs south towards the village of Greenham. It then does a U-turn, heading north for a short stretch, before turning east. The Tone skirts to the northern side of Wellington, then passes Bradford-on-Tone and Norton Fitzwarren, before entering Taunton. From Taunton, the river flows past Creech St. Michael, and becomes tidal at New Bridge Sluice before joining the Parrett at Burrowbridge.

The Bridgwater and Taunton Canal leaves the River Tone at Firepool Lock in Taunton. The canal enters Bridgwater at Hamp. Here, a weir allows excess water to run into the tidal River Parrett. Having passed through the outskirts of Bridgwater the canal ends at Bridgwater Docks, which it enters via a lock. The canal has an overall length of 24.5 km.

The population of the catchment was estimated to be 96,000 in 1995 mostly concentrated in Taunton (54,000 in 1991) and Wellington (11,300 in 1991).

The predominant land use in the upper reaches of the Tone catchment is permanent pasture, with woodland (some ancient semi-natural) on the steeper valley sides. As the valley widens in the middle reaches, land use becomes more intensive, with improved and reseeded grassland, maize cultivation and potatoes (principally in the Hillfarrance sub-catchment) which are regularly irrigated. Sheep and cattle grazing are common, with increasing numbers of horses. In the lower reaches of the Tone, the floodplain is essentially open moorland with improved permanent pasture, reseeded grassland, withy beds and maize cultivation.

The catchment is characterised by its beautiful and diverse landscape with more than half the total area designated as an Area of Outstanding Natural Beauty or Special Landscape Area. The river corridor itself is a designated Landscape Character Area between Taunton and Wellington, and between Creech St Michael and Burrowbridge, where the river passes through the unique landscape of the Somerset Moors.

The river corridor provides a variety of habitat for wildlife including the nationally rare otter and water vole. The Tone is an exceptionally varied river in geomorphological terms until it becomes embanked/impounded below Taunton. It has the most kingfishers of any Somerset river. Otters and water voles are still present in good numbers. There is a rich dragonfly fauna and native crayfish may still be present in the river.

We monitor 176.5 km of rivers in the Tone catchment. Chemical river quality is measured annually and biological quality is measured every five years. In 1998, 84% of monitored river lengths in the catchment were of good or very good chemical quality and 16% were of fairly good quality. In 1995, 98% of the monitored river lengths were of good or very good biological quality (no data are available for the remaining 2% in 1995). The next major review of biological quality is due in the year 2000.

1.6

About this plan

Section 2 outlines actions for resolving the issues identified in the River Tone plan area.

1.6.1 Our everyday work We spend approximately £600 million each year on protecting and improving the environment. Approximately 75% of this is derived from our own charges, principally in the form of licence fees, and the flood defence levy on local authorities which covers part of the cost of our Flood Defence function. The remainder is funded by Government grants; our main sponsor in Government is the Department of the Environment, Transport and the Regions. The Agency also has links to the Ministry of Agriculture, Fisheries and Food and the National Assembly for Wales.

All our charges are reviewed annually and are assessed through consultation. Charge proposals are subject to approval by the Secretary of State and Regional Flood Defence Committees approve flood defence levies.

This translates into a budget of around £ 10.4 million each year for the North Wessex area. A large proportion of this is used to undertake work required of us by legislation and regulation, and by Agency "national must-do's". This includes committing substantial resources to everyday monitoring and management of the environment. Remaining resources are used to undertake other environmental works throughout the area on a priority basis, reviewed annually as part of our business planning process.

1.6.2 About the issues The issues identified within this plan have arisen despite our considerable statutory work and the work of other organisations. Some issues can be resolved by reprioritising and redirecting our resources within our statutory work programme, sometimes needing the help and co-operation of other bodies. Other issues require action over and above our statutory work and funding; resources for this work are not certain. Matched project funding is usually required in these cases.

Some issues require solutions beyond the scope of our existing budgets or technology – they are nevertheless valid issues and earn their place in this plan, in the hope that a solution may be found in the future.

1.6.3 When the actions will be done The financial years covered by this plan are represented by a single date, for example, '01' represents the financial year April 2001 to March 2002. Where costs are shown by a '+' the action is detailed elsewhere in the plan because the same action may resolve or contribute to the resolution of more than one issue.

Although the plan period is five years, because of the short-term nature of our funding we can often only firmly commit ourselves to action in the current and next financial years. Our priorities, policies and budget may change so changing our action programme. The actions in this plan will be prioritised together with those from our other LEAPs area and other proposed actions, as part of our Annual Business Plan process. These changes will be reflected at each Annual Review, together with progress on completing the actions.

1.6.4 Costs Costs are only our estimates of costs to the Agency. They do not indicate that this money has been committed. The costs shown are indicative only, to give the reader an idea of the relative size and resource implications of each action.

2. Issues and Proposed Actions

2.1

Issue: The Impact of agriculture on water quality

Diffuse pollution and nutrient enrichment from agricultural activity are now more of a problem in the catchment. Agricultural activity including forestry, particularly changes in agricultural practices from dairy farming to arable and their effect on soil erosion, is or may be causing or contributing to non-compliance with EC Freshwater Fish Directive in the following stretches:

- River Tone – Huish Champflower to Stawley

Another source, which may be causing/contributing to the failure of the above stretch, is the clear felling of Middleton Forest. Over the last two years the clear felling of trees has resulted in significant washing out of soil and solids due to vehicle movements and felling activities. The Agency is in discussion with the landowner to construct settlement lagoons and improve drainage. Further investigations are required.

- Hillfarrance Brook – source to confluence with Tone
- Back Stream – Combe Florey to confluence with Halse Water

Significant sections of the River Tone catchment are prone to major soil erosion problems when inappropriate agricultural practices are pursued. This can have adverse effects on drainage downstream as rates of accretion and erosion are affected, reducing the capacity of the river channel. The silt also has adverse effects on the ecology of the natural river bed deposits. We are, however, concerned about the soil erosion caused by the increased production of fodder maize. We encourage farmers to follow the Ministry of Agriculture Fisheries and Food, Code of Good Agricultural Practice for the Protection of Soil. The Ministry of Agriculture Fisheries and Food are preparing a Code of Good Practice for outdoor pig farming which is likely to include advice on stocking ratios. (See Issue 2.2: The impact of nutrient pollution and nutrient enrichment.)

The upper Tone and its tributaries such as Hillfarrance Brook, Westbrook and Back Stream are contained in a catchment area having soils of high erosion risk.

We have co-funded a partnership with Somerset Farming and Wildlife Advisory Group and Somerset Wildlife Trust on a project in the River Tone catchment to promote best environmental practice direct to the farming communities. The project aims to reduce soil erosion, minimise runoff and therefore reduce potential water quality problems. (see Section 4.1.1 for details).

Agricultural activities may affect biological quality (see Appendix 5.8). Poor (Class c) biological quality was reported in the Chelston Stream (see Tone Catchment Management Plan, Issue 3.1.5, 1f, p.99). The reduction in water quality was initially perceived to be due to Chelston Business Park and Poole landfill site. However, on further investigation failures appear to be connected to swede washing operations and persistent problems with irrigating wash water. Prosecution is pending for the last incident. Problems may not arise in the future because of improved management and Chelston Stream was classified as Class b biological quality in 1995. A permanently grassed field has now been established to help improve water quality. In addition an unlicensed scrapyard may also contribute to the problem, further investigations are being undertaken.

Actions	Action By	Cost to Agency (£K)	Financial Year				
			99	00	01	02	03
2.1.1 We will investigate potential sources of farm, forestry and other pollution and will work with landowners to control both point and diffuse pollution and give advice on best practice in the two stretches: Huish Champflower – Stawley and Hillfarrance Brook source – to confluence with the Tone. Contact: Environment Protection Team Leader	Agency, Somerset Farming and Wildlife Advisory Group, Somerset Wildlife Trust, Landowners	2	●	●			
2.1.2 We will work with Somerset Farming and Wildlife Advisory Group and Somerset Wildlife Trust on promoting best environmental farming practices. Contact: Environment Protection Team Leader	Agency, Somerset Farming and Wildlife Advisory Group, Somerset Wildlife Trust	1	●	●	●	●	●
2.1.3 We will investigate potential sources of pollution and advise farmers of best practice to control both point and diffuse pollution in the Back Stream. Contact: Environment Protection Team Leader	Agency, Somerset Farming and Wildlife Advisory Group, Somerset Wildlife Trust	0.5	●	●			
2.1.4 We will monitor the Chelston Stream for the effect on biological quality of recent improvements to discharges from vegetable washing activities and investigate the effect of discharges from scrapyards activities. Contact: Biology Leader	Agency	0.5	●	●			

2.2 Issue: The impact of nutrient pollution and nutrient enrichment

Eutrophication is the accelerated growth of algae and higher plants such as duckweed (*Lemna*), which results from the enrichment of water by plant nutrients – mainly nitrogen and phosphorus. It causes a change in the ecological balance and deterioration in water quality (particularly a reduction of dissolved oxygen).

Nutrients enter watercourses from:

- diffuse runoff from farmland of excess organic and inorganic fertilisers
- point sources such as sewage treatment works and some farm discharges

Sewage effluents contain nitrogen from the breakdown of human sewage and phosphate of which 30% to 50% comes from detergents and washing powders. Phosphate is the more important nutrient released into freshwater since lack of phosphate is often the limiting factor in plant growth. Up to 30% of phosphate entering freshwater comes from agricultural sources. Conventional sewage treatment removes a limited amount of phosphate. Phosphate reduction is costly and will only be installed at those sewage treatment works which require nutrient reduction under the European Community Urban Waste Water Treatment Directive because they discharge to designated Sensitive Areas (Eutrophic).

Currently there are no watercourses in the Tone catchment designated as Sensitive Area (Eutrophic) under the Urban Waste Water Treatment Directive by the Department of the Environment, Transport and the Regions and therefore no sewage treatment works required phosphate stripping. However, there is growing evidence to suggest that nutrient levels in the Tone are increasingly elevated and that the watercourse may be becoming eutrophic. We are currently assessing, as part of the review in 2001, whether the Tone from below Wellington Sewage Treatment Works to the Normal Tidal Limit should be proposed as a candidate Sensitive Area (Eutrophic). Work is underway to evaluate and assess the nutrient status of the Tone according to the criteria as outlined in the methodology for identifying Sensitive Areas (Urban Waste Water Treatment Directive) (Department of the Environment 1993).

Should the River Tone from below Wellington sewage treatment works to its Normal Tidal Limit be designated as a Sensitive Area (Eutrophic) then phosphate reduction may be required at Wellington and Taunton (Ham) Sewage Treatment Works.

It may be that the perceived eutrophication is due to a combination of point and diffuse sources, and that the potential benefits of phosphate removal at Wellington and Taunton (Ham) Sewage Treatment Works may be masked by continuing nutrient inputs from diffuse sources. Diffuse inputs may vary in magnitude and location within the catchment and may be seasonal or intermittent. Thus they need to be tackled by other means. Nutrient concentrations are also dependent on the amount of flow in the river available for dilution. Available flow below Taunton is discussed in Issue 2.23: Bridgwater and Taunton Canal water resources management.

We are currently reviewing all consents for Special Protection Areas including the Somerset Levels and Moors as required by the Habitats Directive, because of the potential effects of discharges on nutrient enrichment and its impact on the ecology. This review is due for completion in 2004. Actions arising from the review will require subsequent negotiation and prioritisation.

We are carrying out detailed monitoring of water quality in the rhyne and ditch systems of West Sedgemoor and Curry Moor. Fortnightly sampling started in May and will continue till March 2000.

Nitrate pollution of both surface water and groundwater can reach levels harmful to human health when used for drinking. Water companies monitor public supplies, local authority environmental health officers monitor private drinking water supplies to ensure that public health standards are met.

Taunton Deane Borough Council Environmental Health Department raised concerns about elevated nitrate levels in private water supply boreholes. Nitrate levels exceeding 50 milligrams per litre limit for drinking water, (set in the EC Nitrates Directive 91/676/EEC), have been found in both shallow and deep boreholes in the Otter Sandstone aquifer. This directive requires member states to monitor the nitrate concentration of fresh waters (surface and ground) and to review the eutrophic state of surface, estuarine and coastal waters to identify those that are or could be affected by agricultural nitrate. The land draining to these must be designated as nitrate vulnerable zones. Currently there are no surface water Nitrate Vulnerable Zones in the Tone catchment.

We are currently working with Taunton Deane Borough Council taking and analysing samples from 4 – 6 private water supply boreholes across Taunton Deane for nitrate levels.

We will work with farmers and other interested groups to reduce inputs of nutrients from farms and farmland by:

- promoting the creation of buffer strips especially where arable land is close to a watercourse. Financial assistance may be available to landowners from the Ministry of Agriculture, Fisheries and Food, Countryside Stewardship Scheme. *Buffer strips are bands of unfarmed land approximately 10 to 100 m wide immediately next to a river which, because of the dense vegetation which develops, absorb some of the excess nutrients in the farmland runoff. A guidance booklet is available from our offices. (See Section 4.1.1).*
- promoting the Ministry of Agriculture Fisheries and Food, Codes of Good Agricultural Practice for the Protection of Water and Soil;
- influencing and advising those involved in the spreading of waste to land under 'exemptions' from the Control of Pollution Act 1974.
- Consulting on and implementing our new national Eutrophication Strategy (Environment Agency (1998) Aquatic Eutrophication in England and Wales – a proposed management strategy – Consultative Report). The Strategy was published in late 1999 and forms the framework for tackling eutrophication in England and Wales. This framework will provide a useful basis for future planning for reduction in nutrients in the Tone catchment.

Actions	Action By	Cost to Agency (£K)	Financial Year				
			99	00	01	02	03
2.2.1 We will assess, for review in 2001, whether the River Tone from below Wellington sewage treatment works to its Normal Tidal Limit should be proposed as a candidate Sensitive Area (Eutrophic). Contact: Senior Scientist Regional Water Quality	Agency	Unknown	●	●	●		
2.2.2 We will work with others to ensure compliance with the Urban Waste Water Treatment Directive – Sensitive Areas (Eutrophic) on the River Tone if designated by the Department of the Environment, Transport and the Regions. Contact: Biology Team Leader	Agency, Department of the Environment, Transport and the Regions, Wessex Water	Unknown	●	●			
2.2.3 We will continue to assess the ecological impact of excess nutrients on the catchment. Contact: Biology Team Leader	Agency	Unknown	●	●			
2.2.4 We will continue to assess the nutrient status of the River Tone and those Moors directly fed from it (principally Curry Moor). Start subject to available funding. Contact: Biology Team Leader	Agency	Unknown	●	●	●	●	●
2.2.5 We will collect samples and analyse existing data and consider the need for additional monitoring. Contact: Investigations Team Leader	Agency	Unknown	●				
2.2.6 Where necessary investigate sources of pollution identified above and draw up a suitable remediation plan. Contact: Investigations Team Leader	Agency	Unknown		●	●		

2.3 Issue: Land use, river rehabilitation, channel and bank-side management

Since the 1940s throughout England, land drainage schemes and intensive farming have drained many wetlands and in places reduced river corridors to a thin strip of bank-side cover. This has reduced habitat diversity and channel shading and increased the amount of pesticide and nutrients reaching rivers. In parts of the upper Tone catchment this process has been less evident due in part to the topography. In recent years, however, the pressures facing livestock and dairy farmers have resulted in the conversion of much former grassland to arable. This change is proving to be particularly problematic where there are easily eroded sandy soils on steep gradients. We will promote buffer strips where appropriate, to reduce the amount of nutrients, silt and livestock waste entering rivers and streams and to improve habitat diversity and landscape value (see Issues 2.1 and 2.2). In addition we will seek to promote good agricultural practice to prevent problems arising at source.

We have established the River Tone Catchment Project to achieve these aims. The project uses the expertise of the Farming and Wildlife Advisory Group together with some input from the Agency and the Wildlife Trust to provide guidance on appropriate measures. Works are generally financed by owners with top-up funding through grant schemes where possible (see Section 4.1.1).

We wish to rehabilitate rivers by restoring river corridors and their functional floodplains to a more natural state, which will improve both their landscape and habitat diversity.

We will maintain and restore the biodiversity of rivers and streams in line with the South West Regional Biodiversity Action Plan. Rehabilitation will enhance the fisheries, ecology and landscape value of rivers and their corridors and may reduce the need for flood defence maintenance, improve water quality, and improve access to the river corridor.

Rivers can provide attractive landscapes in our towns but development has often resulted in built-up urban riversides. The Taunton flood defence scheme produced a realigned River Tone downstream of Taunton whilst in the town centre there is a reinforced channel which is unsympathetic to ecology and the landscape. We will continue to seek enhancement opportunities related to developments and local initiatives in partnership with the local authority, developers and riparian owners. We will take into account the archaeology and conservation status of the buildings when considering proposals for river works.

We will also seek to be involved in collaborative projects that improve the habitat, water quality and amenity value of degraded streams, which are non-main river in urban areas. Our success depends on the goodwill and co-operation of riparian owners and the support of other organisations such as local authorities, wildlife trusts, the Countryside Agency, the Farming and Wildlife Advisory Group, the local community and local interest groups.

Large river control structures can be visually intrusive, and act as impassable barriers to fish (see Issue 2.5). These structures can also act as silt traps, slow down flows and promote the growth of algae and aggressive water plants. We will continue our presumption against any further impoundments, whilst still considering any proposals on their individual merits. We would not expect to permit an impoundment without environmental assessment and mitigating works such as a fish pass. We will also examine options for altering such structures to restore a more natural flow regime and improve habitat diversity. We will continue to advise and work with riparian owners with regards to best practice for the operation of control structures.

Actions	Action By	Cost to Agency (£K)	Financial Year				
			99	00	01	02	03
2.3.1 We will continue to collaborate in the River Tone Catchment Project. (See Section 4.1.11) Contact: Conservation Team Leader	Agency, Farming and Wildlife Advisory Group, Wildlife Trust, Riparian owners	25	12	13	●	●	●
2.3.2 We will identify river control structures for the feasibility of redesign. Contact: Fisheries Team Leader	Agency, riparian owners	5		●			
2.3.3 We will work with local authorities to enhance urban streams. Contact: Conservation Team Leader	Agency, local authorities, Wildlife Trust	Depends on project	●	●	●	●	●

2.4 Issue: The siltation of spawning gravels in the Upper Tone

We will maintain, improve and develop fisheries and regulate fishing. The River Tone above Taunton supports brown trout and some grayling offering fly-fishing to the game angler. In the Bridgwater and Taunton Canal and the Tone downstream of Taunton, (where the Environment Agency owns some of the fishing rights), coarse fishing takes place.

Stocks of fish are generally good though salmon are rare. Salmon parr have been found near Nynnehead where Hornshay Weir presently forms a barrier to upstream migration of adults. We wish to see a fish pass at the Weir but have no funds to carry out the work. (See Issue 2.5.)

A further constraint on the successful breeding of salmonids is the silting and compaction of spawning gravels between Clatworthy Reservoir and Taunton, particularly between Wellington and Taunton where the soils are easily eroded. We will encourage improved farming practice to reduce the amount of silt entering the river and its tributaries, (see Issue 2.3), and investigate the water release regime at Clatworthy Reservoir to see if scouring flows are possible.

Actions	Action By	Cost to Agency (£K)	Financial Year				
			99	00	01	02	03
<p>2.4.1 We will promote the prevention of bank erosion and field run off by encouraging riparian owners to create buffer strips, fence banks and plant riverside trees beside the River Tone and its tributaries. Contact: Conservation Team Leader</p>	Riparian Owners, Agency, Farming Wildlife Advisory Group, National Farming Union, Ministry of Agriculture, Fisheries And Food	Unknown	●	●	●	●	●
<p>2.4.2 We will encourage Ministry of Agriculture Fisheries and Food and other grant-aiding bodies to target the catchment for Countryside Stewardship and other grant schemes to help reduce siltation of spawning gravels. Contact: Conservation Team Leader</p>	Agency	Unknown	●	●			
<p>2.4.3 We will carry out a desk study to understand the flow regime in the upper catchment and its potential for impact on siltation. Contact: Area Water Resources Team Leader</p>	Agency	2		●			

2.5 Issue: The need for fish passes at Wellington and Hornshay Weirs

In order to achieve diverse and healthy fish populations in all rivers we need to allow the free passage of fish within the catchment to take place, and so we need to build further fish passes at certain weirs. At present we do not have the resources to carry this out; however we will continue to seek funding to enable us to start this work. There may be a possibility of some funding from English Nature using their Biodiversity Action Plan money.

Actions	Action By	Cost to Agency (£K)	Financial Year				
			99	00	01	02	03
<p>2.5.1 We will continue to seek funding and opportunities to provide fish passes at impassable weirs causing obstruction to migrating fish. Contact: Fisheries Team Leader</p>	Agency	Unknown	●	●	●	●	●

2.6 Issue: Maintaining and enhancing biodiversity

Biodiversity, which is the variety of life on earth, is being lost. In the UNITED KINGDOM alone over 100 species have been lost this century. However the local position is more encouraging as both otter and water vole populations are increasing in this area following their serious decline.

The United Kingdom Government signed the Biodiversity Convention at the 1992 Rio Earth Summit. This committed the United Kingdom to playing its part in halting and reversing the decline in numbers of species and areas of key habitats. The United Kingdom Biodiversity Action Plan lists habitats and species which require conservation action, through Regional and Local Biodiversity Action Plans. 'The Regional Biodiversity Audit Plan for the South West' was published in April 1996 and was followed by 'Action for Biodiversity in the South West' in June 1997 – a series of habitat and species plans to guide delivery. Biodiversity is a key indicator of sustainable development.

Over the next five to ten years, we will work with a number of organisations that are formulating and implementing habitat and species action plans at both regional and local levels. These Biodiversity Action Plans include:

- Taunton Deane Borough Council
- Sedgemoor District Council
- West Somerset District Council
- Devon County Council
- Somerset Environmental Records Centre

In Somerset local Biodiversity Action Plans are being developed at district level whilst Devon's plans are county-based.

British Waterways are developing their own local Biodiversity Action Plan for the Bridgwater and Taunton Canal, whilst organisations like Wessex Water are also producing Biodiversity Action Plans for land they own.

We are developing National Species Action Plans and have agreed to be the contact point for the chalk rivers habitat and 40 species of aquatic animals and plants. Those which are known to occur within the catchment are:

- **otter,**
- **water vole**

The **depressed river mussel** has recently been recorded in other Somerset catchments and may be present in the Tone. We will take into account the habitat requirements of this species when carrying out our river management functions.

The **native crayfish** has also been recorded though there have been no recent records.

The Agency has an important partnership role in the conservation of other water-related habitats including fens, grazing marsh, lowland wet grassland, reedbeds, tufa-depositing springs and headwater streams. Local Plans are targeting species, which are nationally scarce and for which the area is important. Amongst the species identified in the Taunton Deane Borough Council Biodiversity Action Plan are two which are dependent on the aquatic environment, the hairy click beetle and the *Valvata macrostoma* aquatic snail. The Agency will be collaborating with others in the conservation of both species and this may require a change in our river management practices. Work to conserve the hairy click beetle has been jointly funded by the Agency and English Nature's Biodiversity Action Plan fund.

Concern has been expressed that elvers may be unable to enter the network of rhynes within Curry and Hay Moors because former gravity outlets have been sealed. However the only gravity outlet from the area is still operational, but would not be open during the elver run as this is in winter when there are periods of high tides and large discharges. Under these conditions the level of the River Tone is considerably higher than the winter level in Curry Moor. During winter months the inlets to the Moor are also closed and elvers are most likely to arrive during periods of overtopping. Currently we cannot offer a solution to this problem.

We are committed to maintaining and improving the contribution that rivers and wetlands make to the biodiversity of the catchment. We aim to protect sensitive sites through our control over authorisations for water abstraction, effluent discharge, works on or near main river and waste disposal. We are also a partner in an on-going project with the Farming and Wildlife Advisory Group and the Somerset Wildlife Trust to promote good agricultural practice and habitat improvement in the Tone catchment (see Section 4.1.1).

The protection of good habitat and good water quality, are the Agency's principal contributions to the biodiversity initiative. Appropriate habitats enable a wide variety of plant and animal species to flourish.

In fulfilling its day-to-day role we will give priority to:

- protecting the biodiversity of the most diverse stretches of river and remaining wetland areas
- enhancing biodiversity by improving water and habitat quality through channel improvements and protecting flow regimes
- restoring and improving degraded rivers and wetlands by working in partnership with others

Particular threats to biodiversity in this catchment include:

- invasive alien plants that can dominate river margin vegetation (see Section 2.7)
- the probable extinction of native crayfish in their traditional habitats due to displacement by the introduced American signal crayfish
- changing agricultural use; in particular change from beef/dairy to arable

Actions	Action By	Cost to Agency (£K)	Financial Year				
			99	00	01	02	03
2.6.1 Coastal and floodplain grazing marsh: we will collaborate with English Nature to enhance the Curry and Hay Moor Site of Special Scientific Interest by contributing to a Water Level Management Plan and its implementation Contact: Conservation Team Leader	Agency, English Nature, Internal Drainage Board, riparian owners	Unknown	●	●	●	●	●
2.6.2 Coastal and floodplain grazing marsh: we will monitor water quality in the Curry and Hay Moor Site of Special Scientific Interest. Contact: Conservation Team Leader	Agency	1	●	●	●	●	●
2.6.3 Coastal and floodplain grazing Marsh: we will seek opportunities to restore functional floodplains and wetlands in co-operation with riparian owners and the Wildlife Trust. Contact: Conservation Team Leader	Agency, English Nature, riparian owners, Wildlife Trust, Farming and Wildlife Advisory Group	Unknown	●	●	●	●	●
2.6.4 Rivers and streams: we will implement the South West Regional Biodiversity Action Plan for Rivers and Streams by working with others to maintain and where appropriate improve quality and biodiversity. English Nature is providing funding using its Biodiversity Action Plan money channelled via Somerset County Council. Contact: Conservation Team Leader	Agency, English Nature, Farming Wildlife Advisory Group, Wildlife Trust, riparian owners, Local authorities	Unknown	●	●	●	●	●
2.6.5 Otter: we will work closely with the Somerset Otter group to further the understanding of otter ecology in the catchment and to protect features of importance to the species. Contact: Conservation Team Leader	Agency, Otter group, Wildlife Trust, Farming and Wildlife Advisory Group, riparian owners	Unknown	●	●	●	●	●
2.6.6 Water vole: we will work with others to further the understanding of water vole ecology in the catchment with particular emphasis on the tidal Tone. We will work to protect features of importance to the species and to ensure that flood defence practices do not compromise vole habitat. Contact: Conservation Team Leader	Agency, Wildlife Trust, Farming and Wildlife Advisory Group	Unknown	●	●	●	●	●
2.6.7 Depressed river mussel: we will investigate the possibility that this species is present in the catchment. Contact: Conservation Team Leader	Agency	Unknown	●	●	●	●	●

Actions	Action By	Cost to Agency (£K)	Financial Year				
			99	00	01	02	03
2.6.8 Native crayfish: we will continue to be vigilant during our routine surveys for presence of native crayfish particularly in its former known habitat on the River Tone. Contact: Conservation Team Leader	Agency	Unknown	●	●	●	●	●
2.6.9 Locally important species (<i>Valvata macrostomata</i> snail, hairy click beetle, and black poplar): we will work with others to sustain viable populations of these species. Contact: Conservation Team Leader	Agency, Internal Drainage Board, riparian owners, District Council, Wildlife Trust	Unknown	●	●	●	●	●

2.7

Issue: The need for extra protection for key designated nature conservation sites

The EC Birds Directive and the EC Habitats and Species Directive (which was transcribed into United Kingdom Law as the Conservation (Natural Habitats and of Wild Fauna and Flora) Regulations, 1994) place additional responsibilities on us along with our normal conservation duties.

The aim of the legislation is to protect and conserve certain species and habitats that are threatened in the European context. The first stage in achieving this is through the establishment of a network of nature conservation sites that will be known as the Natura 2000 Network. The sites, which will constitute the Natura 2000 network, are Special Protection Areas (SPAs), which are designated under the Birds Directive and Special Areas of Conservation, which are designated under the Habitats Regulations themselves. It is Government policy that Ramsar wetland sites will also be considered under the Regulations.

There are two sites in the Tone catchment, which will eventually become part of the Natura 2000 network as follows:

Site	Designation	Qualifying Interests
Somerset Levels and Moors	SPA, Ramsar	Bewick swan, golden plover, teal, wintering waterfowl numbers in excess of 20,000 and the outstanding assemblage of ditch flora & fauna, particularly water beetles.
Holme Moor and Clean Moor	Candidate Special Area for Conservation	<i>Molinia</i> meadows on chalk and clay (Eu-Molinion), calcareous fens with <i>Cladium mariscus</i> and <i>Carex davalliana</i>

The United Kingdom Government has decided that as soon as a site has been submitted to Brussels for confirmation (i.e. it has become a candidate site, or candidate Special Area for Conservation), the regulations will apply. This means that the Conservation Regulations already apply to the sites listed above.

Under the Regulations the Agency is a 'Competent Authority', and has extra responsibilities to safeguard the sites.

Any proposals or applications for new authorisations which may, either alone or in combination with others, have an effect on the conservation interests of a Natura 2000 site will be subject to a full Appropriate Assessment of the impact on the interests of the site. The application can only be granted where the Agency is sure that it will not adversely affect the integrity of the European site.

Further to this requirement, we are obliged to review all existing authorisations (e.g. consents to discharge, abstraction licences, waste licences etc.) and activities (e.g. land drainage or flood defence work) which may be affecting the sites, taking the advice of English Nature fully into account. These licences can be either inside or outside the site, as those outside the boundary may still have the potential to impact on sites inside the boundary.

Stage II of our review procedure is currently under way using a methodology agreed with English Nature to determine which authorisations are likely to be adversely affecting these sites. Bids to resource this process should have been completed by September 1999. The review process is intended to be complete by 2004 and can begin once bidding is complete.

Actions	Action By	Cost to Agency (£K)	Financial Year				
			99	00	01	02	03
2.7.1 We are currently reviewing all authorisations and actions as required by the Habitats Regulations. Contact: Regional Conservation Team Leader.	Agency	1		●			

2.8 Issue: Invasive plants

Japanese knotweed, giant hogweed and Himalayan balsam were introduced to Britain in the nineteenth century for ornamental reasons. These species have become aggressively dominant along road, rail and river corridors where human activities have aided their dispersal. They have become problematic along river corridors where they shade our native vegetation, increase river bank erosion following autumn dieback, decrease flood storage capacity and devalue biodiversity. Giant hogweed is also a health hazard. Under the Wildlife and Countryside Act, 1981 it is an offence to plant or cause Japanese knotweed and giant hogweed to grow in the wild.

Parts of the River Tone and its tributaries now have significant stands of Himalayan balsam. Water is important for its dispersal and therefore this species is strongly associated with riparian habitats and tends to colonise downstream sites rapidly. It has not yet colonised the upper tributaries of this catchment, all of which are of high conservation value.

Japanese knotweed does not appear to be a particular problem in the Tone catchment at present. We will continue to monitor this problem and recommend appropriate control measures.

Accurate information on the distribution and status of alien species is the key to successful management. We will develop a management strategy, by establishing links with other interested parties to tackle the problem of alien invasive species in the catchment.

Ragwort is reported to be a problem in the lower catchment reaches of the Tone and likewise water fern in Curry and Hay Moors. The landowners are responsible for controlling these plants. We have produced a leaflet that gives advice to riparian owners on how to control alien invasive plants and we will give further advice if required.

Actions	Action By	Cost to Agency (£K)	Financial Year				
			99	00	01	02	03
2.8.1 Extensive River Habitat Surveys planned in this catchment will give a good indication of the distribution of alien invasion plants. Contact: Conservation Team Leader	Agency	Unknown	●	●			
2.8.2 We will continue to monitor the distribution and status of invasive alien species. Contact: Conservation Team Leader	Agency	2 p.a.		●	●	●	●
2.8.3 We will provide appropriate advice to riparian owners on the identification and control of the three alien species through the River Tone Catchment Project Contact: Conservation Team Leader	Agency, Farming and Wildlife Advisory Group, Wildlife Trust, Riparian owners	9	●	●	●	●	

Actions	Action By	Cost to Agency (£K)	Financial Year				
			99	00	01	02	03
2.8.4 We will set up a management group for Japanese knotweed, to identify management options and control mechanisms. Contact: Conservation Team Leader	Agency, English Nature, Local Authorities, Environmental Records Centre, Wildlife Trusts, British Trust for Conservation Volunteers, Forestry Commission, Angling clubs	5 p.a.					

2.9 Issue: Disease of alder trees

Alder trees are often abundant along watercourses, where they provide valuable cover for wildlife and their roots help to stabilise the bank. In 1993 it was discovered that alder roots can suffer from a fatal disease caused by a fungus of the genus *Phytophthora*. Affected trees produce few, small, yellow leaves, which often fall off early. The trunk of an infected tree often has tarry rusty spots, indicating that the bark is dead and the tree is dying.

Phytophthora is of particular concern in this catchment due to the very large riparian alder population. Although there is not a high incidence of this disease in the catchment there are some reported outbreaks. A wide-scale spread of this disease would have a dramatic effect on the landscape and riparian ecology, decreasing the habitat and cover available for wildlife. Loss of riparian alders would be extremely serious in the upland catchment where high river velocities can cause serious erosion problems.

There is very little information on and experience of the management of *Phytophthora*, since it is a relatively new problem. The Agency and the Forestry Commission have produced a leaflet explaining the disease and giving guidelines for managing infected riparian alders. We will use this leaflet and other means to promote awareness. The Agency and the Forestry Commission would also like to know of new sightings of the disease.

We will monitor the distribution and status of the disease, assess its long-term impact and take remedial action when required. This may involve the planting of native trees to replace lost alders to maintain bank stability and provide wildlife habitats. Future management may also involve coppicing of dangerous trees.

Actions	Action By	Cost to Agency (£K)	Financial Year				
			99	00	01	02	03
2.9.1 Extensive River Habitat Surveys planned in this catchment will provide an indication of the extent of the disease. Contact: Conservation Team Leader	Agency	Unknown					
2.9.2 We will identify management options, once the outcome of research into disease transmission is known. Contact: Conservation Team Leader	Agency, Forestry Commission	Unknown					
2.9.3 We will formulate a management programme for bank-side alders in partnership with others. Contact: Conservation Team Leader	Agency, Forestry Commission, Farming and Wildlife Advisory Group, Local Authorities, Wildlife Trust	Unknown					
2.9.4 We will undertake remedial action according to the management programme. (see Issue 2.25) Contact: Conservation Team Leader	Agency, Forestry Commission	Unknown					

2.10

Issue: The investigation of the spined loach on the Maiden Brook

The spined loach is an uncommon fish in the River Tone area and sightings have been reported in the Maiden Brook. The spined loach is listed under the Species and Habitats Directive and the Bern Convention. Current records indicate that the species has a localised, fragmented distribution. We will carry out a survey of the brook to find out if it is there and if so, the extent of its range.

Actions		Action By	Cost to Agency (£K)	Financial Year				
				99	00	01	02	03
2.10.1	We will investigate the presence of the spined loach in the Maiden Brook by carrying out a population survey. Contact: Fisheries Team Leader	Agency	1		●			

2.11

Issue: The impact of new development on drainage, flooding and water resources

In accordance with the former Department of the Environment '(DoE) Circular 30/92 Development and Flood Risk' we advise planning authorities on flood defence matters. We also issue consents and byelaw approvals for certain works, which are likely to affect the flow of water or impede any drainage work.

As statutory consultees to Development Plans, we advise the following local planning authorities in the River Tone area on the impact of development on flooding and drainage:

- Taunton Deane Borough Council
- Somerset County Council
- Sedgemoor District Council
- Mid Devon District Council
- West Somerset District Council

We seek the earliest opportunity to discuss development proposals with the developer and the local authority to ensure environmental protection and maximum sustainability. We review and comment to the planning authority on all planning applications, which may have environmental implications. Comments include recommending that planning permission is not granted unless certain conditions to protect the environment are attached. In some cases we formally object to a planning application either conditionally or outright. In determination, a number of policy matters are taken into consideration with decision-making being guided by development plans (structure and local), government advice in planning policy guidance notes (PPGs) and Department of the Environment (DoE) circulars. Local authority policy documents add further guidance. Nationally we are conducting an audit of the take-up of our requirements.

We have supplied detailed **indicative** floodplain maps (Section 105 C30/92 maps) to the local authority to assist in their work of steering development away from floodplains. "Level A" plans cover main river lengths within the Tone catchment. These were delivered to the Local Planning Authority in 1997. Section 105 Level B maps are more detailed flood risk maps. The standard we use is a flood that has a statistical probability of happening once in 200 years for the coastal/tidal situation and once in 100 years for rivers.

The Local Plan for Taunton Deane covers the majority of the Tone Catchment. Taunton Deane Borough Council included Section 105 maps on their Local Plan Deposit maps. This is most helpful as it not only informs the reader of the plan on this matter but also demonstrates to other local planning authorities that it can be practically achieved without overburdening maps. To date, West Somerset who also placed their Local Plan on Deposit last year have not included the Section 105 maps. This has resulted in objections from the Agency on a number of settlements. Continuing discussion will, it is hoped, lead to inclusion of the Section 105 floodplain data on the adopted plan's maps.

Sedgemoor District Council has also included the Section 105 data on their maps. The Deposit Plan has now been issued and the Agency is pleased to note that the Plan also includes data on Groundwater Protection Zones.

Subsequently, a series of detailed studies of certain watercourses have been undertaken in the catchment (Level B Maps). The Level B studies consist of hydrological modelling of the existing catchment and hydraulic modelling of those sections of the watercourse which may be affected, either directly through existing flood risk to the site itself or by upstream discharges of surface water from new development. The results of these studies became available towards the end of 1997.

Level B maps have already been provided for Taunton Deane Borough Council and it is anticipated that, subject to funding, all local planning authorities will be provided with detailed flood risk maps for consideration in the current land-use planning round.

Subject to funding, the timetable for the period up to 2000 is:

The increase in volume and speed of run off from paved areas (roads, car parks and pavements) is of concern to us. To minimise this effect, we recommend the use of Best Management Practices (BMPs) or Sustainable Urban Drainage (SUDs) which can include such things as swales (a much improved 'ditch', with a very broad base and gently sloping sides often grass covered, which aids the settlement of pollutants), reedbeds, wetlands, flow attenuation ponds and permeable paving. We encourage developers to enhance the ecological and wildlife value of their site as part of this work. Detention reservoirs and attenuation ponds can be incapacitated by high siltation rates therefore advice should be sought before installation. For further guidance see our recently revised Scottish Environment Protection Agency/Agency leaflet or video – 'Nature's Way'.

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. We comment on all county and district plans, and any individual planning applications that will have a significant water use, with respect to water resources and indeed water efficiency (as all new homes are now metered water efficiency can reduce customers' bills). However we can only comment on water resources in general as the specifics depend on which sources the relevant Water Company would plan to use to supply the development.

Actions	Action By	Cost to Agency (£K)	Financial Year				
			99	00	01	02	03
2.11.1 We will produce hydraulic models for identifying definitive floodplains for some local authority identified reaches for 1999/00. Contact: Development Control Team Leader	Agency	Complete					
2.11.2 We will produce detailed flood risk maps (S105) for land-use planning within Local Development Plans according to the above timetable. Contact: Development Control Team Leader	Agency	292 total	70	147	75		
2.11.3 We will liaise with planning and highway authorities, consultants and contractors to ensure protection for the water environment before, during and after construction of developments. Contact: Development Control Team Leader	Agency, local authorities, Highways Agency	25	●	●	●	●	●
2.11.4 We will liaise with the local planning authorities to ensure that appropriate policies, to protect the environment, are included in their Development Plans. Contact: Team Leader Planning Liaison	Agency, local authorities	50	●	●	●	●	●

2.12

Issue: Flood warning and Major Incident Plans

Absolute flood protection is not possible. We issue warnings by direct contact and via local radio. We also provide recorded information on current flood warnings. Leaflets that fully explain the flood warning service are also available from our offices.

Where flood defence schemes cannot be justified, we seek to improve its flood warning arrangements. Following the severe floods of Easter 1998, the Government instigated an independent review of events, the Bye Report. In a Parliamentary Statement on 20 October 1998 on the Bye Report, we were given clear targets to achieve a seamless and integrated service of flood forecasting, warning and response by April 2000. To achieve this we are required to undertake a thorough review of the whole system to ensure we are focused to deliver the required service, that management arrangements make this possible and that there are clear lines of accountability and responsibility.

We have considered the Bye Report, taken due regard of the Parliamentary statement, compared the needs of the Report with the findings of the Agriculture Select Committee on Flood Defence and Coastal Defence 30 July 1998 and comments from the Ministry of Agriculture Fisheries and Food, and have now drawn up a comprehensive action plan.

We will implement the action plan nationally and include the following actions:

- Review flood warning dissemination plans and major incident plans.
- Review current supervisory duties and develop a new approach to their use.
- Review and publish consistent flood risk maps for use in regulating development.
- Review emergency response arrangements with local authorities and carry out joint exercises using new arrangements. This must include clear understanding of the roles of all organisations involved.
- Introduce improvements in our network of telemetered river flow monitoring.
- Carry out a complete visual survey of all flood defences including main river, ordinary watercourses, tidal and sea defences and in future carry out regular updates.
- Revise our National Flood Warning Strategy and establish a national flood-warning centre.
- Review ways of warning the public; improve provision of data from telemetry systems and its use in giving warnings.
- Target flood warning communications at vulnerable temporary locations such as caravan and camping sites.
- Work with Government to review research into the impact of climate change on flood frequency.

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

We are carrying out a regional review of our flood warning service that will identify the priorities and appropriate funding for the River Tone catchment.

A Flood Warning Standards of Service study (autumn 1999) has identified what is at risk, and its level of protection throughout the region. Future priorities for flood warning improvements will be set by a strategy based on the study's results.

A later stage of the Agency's Flood Warning Dissemination Project is to produce, in conjunction with local authorities and emergency services, Major Incident Plans for urban areas protected by flood defences. The plans are funded by the Agency, but owned by the local authority. We have contributed to the Major Incident Plan for Taunton which is planned to be in place in December 1999.

Actions	Action By	Cost to Agency (£K)	Financial Year				
			99	00	01	02	03
2.12.1 As part of the Regional study we will implement the Easter Floods Action Plan and review Flood Warning and decide priorities for improvement in the River Tone area. Contact: Regional Flood Warning and Area Flood Defence Managers	Agency	1 million p.a. for the South-West Region	●	●	●	●	●
2.12.2 We will promote and contribute to a Major Incident Plan for Taunton. Contact: Flood Warning and Flood Defence Managers	Agency	Complete					

2.13

Issue: The need for improved flood defence practices in the catchment

Riparian landowners have the responsibility to maintain the watercourses on their land although in practice the situation is rather different. Under the Land Drainage Act 1991 the more significant rivers are designated as *main river* and the Act gives the Agency powers to maintain them, and in practice we maintain them using money obtained from a precept on the Council Tax. We are also responsible for a large number of water-level management control structures. The current political climate for reducing direct taxation is resulting in downward pressure on our flood defence budgets, which in turn is having an effect on our priorities.

Local authorities have powers to maintain non-main river though in general they only exercise them where lack of maintenance is causing a significant flooding problem. The Agency has an overall duty to supervise flood defence matters. We do this by advising who is the appropriate person or body to deal with a problem.

Main rivers in the Tone catchment include the River Tone from the village of Waterrow to its confluence with the Parrett at Burrowbridge, Hay Moor Main Drain and Curry Moor Main Drain on the Levels. The total length of main river is 69 km, a very small percentage of the total for rivers in the catchment.

Levels of flood defence, tidal for the lower catchment, and fluvial for the upper catchment, are relatively high. However, increased development will require floor mitigation works so that any risk to third parties from increased surface water disposal can be reduced.

Over the years, the Agency's predecessors have constructed flood alleviation schemes to protect Taunton and the villages of Ruishton, Creech St Michael, Ham Lane and Ham downstream. These have been designed to cope with the Ministry of Agriculture Fisheries and Food Indicative Standards of protection. The Taunton scheme has been improved and now provides a 1 in 200 year return flood protection whilst the villages downstream fall between 1:20 to 1:50 year flood return.

A great deal of concern has been expressed from a number of sources about the level of maintenance on the river particularly in the lower reaches. Asset inspections of our flood defences have shown a need for increased maintenance, to ensure they are secure should a flood reach their design limit. We are proposing to step up annual maintenance of these schemes that will run alongside the already extensive programme of annual grass cutting and weedcutting together with the tree maintenance every ten years on the upper reaches above Taunton. Much work, which includes dredging and bank repairs, has already been carried out over the last few years downstream from Ham where the river is embanked through the moors. Further significant works are proposed and this is reflected in the actions. There are however considerable demands on the limited funding and this together with our environmental duties may have a major impact on the timings and extent of the work. Maintenance practices such as dredging and weedcutting can have a harmful effect on water quality and river life and so must be carefully managed to reduce impacts.

We take every opportunity to improve flood defence standards where Treasury rules mean an improvement scheme can be justified. Justification is based on cost-benefit. If a scheme is proposed, and not justified on cost-benefit, it will not go ahead. If a scheme is justified, it might not come high enough on the Ministry of Agriculture Fisheries and Food priority list for grant aid. The scheme will then require some other funding. Where defences are currently below standard, we can link funding with development proposals such as the new Tesco Superstore at Tangier and redevelopment at Norton Fitzwarren or by setting up a partnership for bidding for other funds where there are significant environmental benefits.

Actions	Action By	Cost to Agency (£K)	Financial Year				
			99	00	01	02	03
2.13.1 We will complete the Asset Survey for input to the Flood Defence Management System. Contact: Flood Defence Operations Team Leader	Agency	60	●	●			
2.13.2 We will use the Flood Defence Management System and other manuals and guidance notes to justify priorities and implement maintenance works within the catchment. Contact: Flood Defence Operations Team Leader	Agency	Unknown	●	●	●	●	●
2.13.3 We will develop the computer model for the Parrett and Tone system and use it to investigate modifications to the operational and maintenance procedures. Contact: Flood Defence Operations Team Leader	Agency	5	●	●			
2.13.4 We will carry out capital improvements to the Stanmoor Bank to safeguard its structural stability. Contact: Flood Defence Projects Team Leader	Agency	Total 3000				2000	1000
2.13.5 We will return Hook Bridge Spillway to design level after we have completed Stanmoor Bank subject to review of Flood defence practices. Contact: Flood Defence Operations Team Leader	Agency	Unknown					●
2.13.6 We will carry out capital improvements to Baltmoor Wall, which is now classified as a dam under the Reservoirs Act. Contact: Flood Defence Operations Team Leader	Agency	1450		●	●		
2.13.7 We will undertake a review of flood defence staffing and field inspection practices within the catchment. Contact: Flood Defence Operations Team Leader	Agency	Unknown	●	●			
2.13.8 We will implement the flood alleviation scheme for the Hillfarrance Brook and then designate the Brook as a "main" river. Contact: Flood Defence Projects Team Leader	Agency (in years 04/05)	400					

2.14

Issue: Somerset Levels and Moors water level management strategy

Following our review of the National Rivers Authority 1991 Strategy we launched our Action Plan on September 27th 1999. The Action Plan includes actions to carry out a review of the Agency's Flood Defence Practices in the area. The Tone catchment forms part of this review. A scoping document was produced and the public consultation ended on 31st October 1999.

The overall aim of the new Strategy is for the wise use of land and water in the Somerset Levels and Moors which achieves the conservation and enhancement of the wetland's special features through economically viable and environmentally sensitive water level and land management. The Action Plan will involve actions and costs by other partner organisations and individuals.

Actions	Action By	Cost to Agency (£K)	Financial Year				
			99	00	01	02	03
2.14.1 We will implement actions agreed in the Somerset Levels and Moors Water Level Management Strategy Action Plan (September 1999). Contact: Somerset Levels and Moors Projects Officer	Agency, English Nature, Somerset County Council, Farming and Rural Conservation Agency, Royal Society for the Protection of Birds, National Farmers Union, Countryside Landowners Association, Association of Drainage Authority, Internal Drainage Boards, English Heritage, Levels and Moors Partnership	All cost figures are total costs for the whole of the Levels and Moors	524	298	287	269	95
2.14.2 We will carry out a Review of the Agency's Flood Defence Practices on the Somerset Levels and Moors. Contact: Somerset Levels and Moors Projects Officer	Agency	All cost figures are total costs for whole of the Levels and Moors	40	80	15		

2.15

Issue: The impact of energy and fossil fuel use on climate

It is now generally accepted in Europe that there is a high risk that some chemical emissions to the atmosphere may have a significant impact on the global environment. Emissions of a range of greenhouse gases, notably carbon dioxide and methane are adding to the amount of gases that naturally warm the atmosphere, called the natural "greenhouse" effect, which may cause global warming. Estimated emissions of carbon dioxide nationally from large industrial processes and other sources in the United Kingdom in 1990 totalled 155 million tonnes. Estimated emissions of methane nationally from industrial processes, agriculture and other sources in the United Kingdom in 1994 totalled 4.25 million tonnes. Methane is 29 to 30 times more damaging as a greenhouse gas than carbon dioxide. Methane is produced in landfills containing biodegradable waste and so we will work to reduce these emissions through the waste-management licensing system (see Section 2.1). The international community is trying to get the major industrialised countries to sign up to achieving reductions of these "greenhouse" gases. The Kyoto agreement made in 1997 legally binds industrialised countries to reduce six main greenhouse gases (including carbon dioxide) overall to 5.2% below 1990 levels over the period 2008-2012. The United Kingdom agreed to a target of 12.5%. The present government is committed to reducing carbon dioxide emissions by 20% on 1990 levels by 2010.

Fossil fuel burning directly for heat, light or transport, or to generate electricity, produces greenhouse gases – mainly carbon dioxide and sulphur dioxide.

In accordance with our aim of contributing to the attainment of sustainable development we need to promote the reduction of energy and fossil fuel use in industry and commerce, including the reduction of our own energy consumption.

We will:

- promote the efficient use of energy in industry
- seek reductions in direct heat output from local industry and commerce
- seek reductions in the production of greenhouse gases such as carbon dioxide and methane through our regulation of landfills and complex industrial processes.
- promote fuel-efficient, integrated transport
- set targets for our own energy consumption and report on our progress.

Actions	Action By	Cost to Agency (£K)	Financial Year				
			99	00	01	02	03
2.15.1 Reduce energy (electricity) consumption in our offices and depots by 20% compared to Energy Efficiency Office typical, or 1991/92 consumption which ever is lower. Contact: Area Business Services Manager	Agency	Unknown	●	●	●	●	●
2.15.2 Reduce business mileage in the North Wessex Area by 5% and improve our overall fuel efficiency by 3 mpg on our 1996/97 figures. Contact: Area Business Services Manager	Agency	Unknown	●	●	●	●	●
2.15.3 We will seek reductions in energy use and greenhouse gas production as part of Integrated Pollution Control (IPC) of major industry. Contact: Area Environment Planning Manager	Agency	Unknown	●	●	●	●	●
2.15.4 We will promote the efficient use of energy in industry and agriculture as part of our regulatory activities. Contact: Area Environment Planning Manager	Agency	Unknown	●	●	●	●	●

2.16 Issue: Air Pollution

The majority of the Tone catchment area falls within the areas administered by Taunton Deane Borough Council and West Somerset District Council. These authorities have conducted and published the first-stage air quality review and assessment report as required by the Government Air Quality Regulations. This has been carried out in a co-ordinated way by a steering group consisting of members from Mendip District Council, South Somerset District Council, Taunton Deane borough Council and West Somerset District Councils, together with the County Council. The Agency has been consulted on this review and assessment recently and has commented on it to the steering group. In general the report does not show nor anticipates serious or repeated exceedences of air quality standards, except for transport-related pollution where there are high traffic flows and/or congestion, such as on the M5 motorway and in and around Taunton. Nevertheless further review and assessment of air quality is recommended for four pollutants, sulphur dioxide, nitrogen dioxide, carbon monoxide and particulate matter (PM₁₀) in the Taunton Deane area. The Agency agrees with this conclusion.

In March 1999, Taunton Deane Borough Council started diffusion tube surveys for NO₂ and SO₂. The purpose was to identify 'hot spots' prior to the second stage review and assessment of air quality in Taunton Deane Borough Council area. Taunton Deane Borough Council Air Quality Review document is available at the University of the West of England website: <http://www.uwe.ac.uk/facults/aqm/regionalinfo/regionsHOME>.

Ambient concentrations of smoke and sulphur dioxide have generally declined in the United Kingdom as a whole over the last 20 years. Similarly, both the quantity released and the concentration of lead in the atmosphere at roadside sites has declined since the mid 1980s following the introduction of lead-free petrol. However, the release of some pollutants such as nitrogen oxides (NO_x), carbon monoxide (CO) and volatile organic compounds (VOCs) have remained relatively constant during this period, although there may have been changes in their source. For example, releases of oxides of nitrogen from industrial sources have generally declined whilst emissions from road traffic have increased.

Planned development in the area will lead to an increase in vehicle movement and therefore increase the amount of polluting discharges, especially oxides of nitrogen. With the exception of ground level ozone, ambient levels of these pollutants are generally lower in the South West of England than in many other parts of England and Wales.

All combustion processes in air produce oxides of nitrogen, mainly nitric oxide (NO). Nitric oxide however often reacts with ground level ozone creating nitrogen dioxide (NO₂) and oxygen (O₂). Nitrogen dioxide is a gas which exacerbates respiratory illnesses. Both nitric oxide and nitrogen dioxide are indirect greenhouse gases, and are known collectively as NO_x.

Road transport accounts for 46% of the United Kingdom emissions of NO_x. Other large producers are the electrical power generation industry, which accounts for 22%, other industry and commerce 12% and domestic sources 2%.

In cities the proportion of total NO_x emissions which comes from vehicles increases dramatically. Studies done in London in 1993 and recently in the West Midlands attribute 76% and 85% respectively of NO_x emissions to vehicles.

The Tone catchment is a mainly rural, non-industrial area with no major or large-scale industrial processes. There is one small IPC process authorised by the Agency: the machining of beryllium metal at Avimo Ltd., located in Taunton, which has a very high standard of abatement and control.

We will help achieve the targets of the National Air Quality Strategy in a number of ways:

- Working with local authorities, government agencies, and developers to ensure that developments make use of transport options producing the least pollutants. The Government's National Transport Strategy will have an important bearing on this issue.
- North Wessex area is also locally working on air quality through its membership of the steering group of the University of the West of England's Air Quality Management Centre.
- Aiming to achieve a 15% reduction in our annual mileage (see Section 4.2: The Agency's own Environmental Management.)
- Requiring stricter environmental criteria for replacement Agency vehicles and promoting efficient driver training (see Section 4.2)
- Increasing the use of public transport by our staff (see Section 4.2)
- Promoting more video conferencing thereby reducing the number of vehicles travelling to meetings (see Section 4.2)
- Reducing business mileage in the North Wessex Area by 15% and our overall fuel efficiency by 3 mpg on our 1996/97 figures (see Section 4.2)

2.17

Issue: Soil Acidification

Some soils, particularly those which are naturally acidic such as granite-derived soils and peat soils are vulnerable to increased acidity. This effect is made worse by high rainfall typically in upland areas and also by extensive conifer plantations. Sulphur-based deposits currently affect a number of areas in the Tone catchment. (See map 3). However computer modelling shows that this problem should be resolved by 2005 provided that we continue to achieve the reductions in emissions expected as part of the Government's programme. If rain combines with certain airborne pollutants it becomes much more acidic and accelerates the process of soil acidification. The main pollutants are sulphur dioxide (SO₂) and the oxides of nitrogen (NO_x). The acidification of soil leads to the leaching out of minerals essential for plant growth and many plants cannot survive – others are severely damaged.

In 1994, a protocol was agreed under the United Nations Economic Commission for Europe to reduce exceedences of critical loads – the rates of sulphur deposition which ecosystems and other targets can tolerate in the long term without suffering damage. The United Kingdom agreed to reduce its sulphur dioxide emissions by 80% by 2010 from a 1980 baseline.

The United Kingdom's sulphur strategy published in December 1996 (Reducing Emissions of Sulphur Dioxide, A Strategy for the United Kingdom) indicates that the United Kingdom will meet interim targets for 2000 and 2005. Compliance is also expected with the 80% reduction target for 2010. Critical load exceedences however will continue at some sensitive sites. In January 1997 the European Commission published a draft strategy on acidification which aims to further reduce critical load exceedences for both sulphur and nitrogen. See Map 3 for the current and forecast critical load exceedences for this area.

Air pollution does not remain within catchment boundaries and the air pollution causing the areas of critical load exceedence in this catchment come chiefly from Bristol and Avonmouth and also from elsewhere. There are no breaches of air quality standards known to be caused by authorised Integrated Pollution Control (IPC) processes in the area. We are working to reduce acid gas emissions from the complex industrial processes that we regulate in the Avonmouth area (see our Bristol Avon LEAP for further information).

2.18

Issue: The impact of methane produced by landfill sites and odour nuisances

With the decay of biodegradable wastes in landfills, a mixture of gases generally known as landfill gas is produced. In the early years of decay carbon dioxide (CO₂) is the main contributor to landfill gas and its emission to the atmosphere. As available oxygen is used up within the landfill methane (CH₄) gas is produced and becomes the main contributor. Both carbon dioxide and methane are greenhouse gases; however, methane is estimated to be 20-30 times more damaging than carbon dioxide. Therefore, conversion of methane to carbon dioxide by burning is less damaging to the environment than allowing the landfill gas mixture to be discharged to the atmosphere unchanged (see Issue 2.1).

The combustion of gas either in flares or as part of an energy recovery process converts methane to carbon dioxide, and should be undertaken whenever the landfill gas yield is capable of supporting combustion. However, only sites that are or have taken large quantities of biodegradable waste may be able to support combustion in some form or another. At these sites gas management is also carried out for health and safety reasons.

Within the Tone catchment area Poole Landfill site (Wellington) (NGR ST152 217) operated by Wyvern Waste Services Ltd currently operates a gas flare system to control the levels of methane gas. In addition the operator is intending to introduce an energy generation scheme to utilise the landfill gas. Electricity Development Limited has been appointed by Wyvern Waste to progress the project. Planning permission has been granted and generation equipment will be installed in 2000. Potential problems with odour are predicted during the installation of the new gas collection system.

The area around this landfill site has suffered from a long-standing landfill odour nuisance. The operator uses a flaring system to control the level of gas on site. This site is nearing completion, at which time all the landfill area will be incorporated within the gas extraction scheme. The Company has substantially increased the area of the site from where the gas is extracted and has added a second flare. A new cap will also be included for part of the site. The new improvements will require modifications to the waste management licence and/or working plan. We are in discussion with Wyvern Waste with regard to including a condition relating to the management of odour.

Regular liaison meetings are held between the Agency, Wyvern Waste, Taunton Deane Environmental Health Officers, West Buckland Parish Council, Nynhehead Parish Council and local residents regarding the odour nuisance.

Actions	Action By	Cost to Agency (£K)	Financial Year				
			99	00	01	02	03
2.18.1 We will revise the waste management licence and working plan for Poole landfill. Contact: Waste Licensing Team Leader	Agency	3		●			
2.18.2 We will continue to monitor and encourage the operator to minimise odour nuisance. Contact: Environment Protection Team Leader	Agency	1	●	●			

2.19

Issue: The need for a better informed and integrated Agency view on waste management

We are working with the waste industry, the local authorities and the Government to achieve more sustainable waste management. The United Kingdom government saw the need for a better informed and integrated strategy for waste management and so produced its first Statutory Waste Strategy in a White Paper "Away with Waste". This was out for public consultation till the end of September. The Strategy will be published in the spring of 2000. It will provide definitive guidance on best practice for waste minimisation and disposal.

Before the Strategy can be completed we needed to find out how much and what type of waste was produced where. To achieve this we have carried out a National Waste Production Survey which began in autumn 1998 and was completed in April 1999.

This sample information will be used to produce national waste arisings figures and from these, estimates will be made of the waste arisings within each District Council or Unitary Authority area.

We will produce Strategic Waste Management Assessments for the local planning authorities to help them produce their Local Waste Plans. The assessments will include the results from the Waste Production Survey on the amount of waste produced by industry and commercial businesses. This information will be used by local authorities to plan for waste collection and disposal, and will also be available for any other organisation or the general public.

The Tone catchment lies within Somerset County Council's area. They are currently working on a draft Waste Local Plan for publication in June 2000.

Poole landfill is the only major site within the area taking putrescible waste. At current rates of filling it has only four years of life left. This fact must be taken into account when planning for waste.

We have also undertaken a £1.5 million programme of research in life-cycle techniques for waste management. Life-cycle assessment is a technique in which the inputs and outputs of a particular process or practice are systematically identified, quantified and costed from 'cradle to grave'. The various options for waste disposal are then considered in terms of their environmental and economic impact and the best practicable environmental option is chosen. This methodology will provide a central plank for local authorities in determining the provision of waste facilities in its area. It is expected that this more case-specific methodology of life-cycle analysis for waste management will supersede the Waste Hierarchy for Local Government when planning which waste-management facilities and techniques to employ.

Actions	Action By	Cost to Agency (£K)	Financial Year				
			99	00	01	02	03
2.19.1 We will produce Strategic Waste Management Assessments for the local authorities in this area. Contact: Tactical Planning Team Leader	Agency	1		●	●		

2.20

Issue: The over-creation of waste

Our consumer society is producing ever greater quantities of waste each year. It has been estimated that the amount of waste produced nationally in one year would fill Lake Windermere. Non-renewable resources are used once and then disposed of in ways which render them permanently unusable. Increased waste costs companies more and there is a potential for pollution from all methods of disposal. It is becoming increasingly difficult to find sufficient space to continue the use of landfill as our main disposal method and waste is often transported large distances. This is clearly not sustainable.

We are contributing to achieving the government's National Waste Minimisation Targets in a number of different ways.

- We encourage and guide industry to develop new and improved techniques for the management of special and other industrial wastes.
- For non-integrated Pollution Control regulated industries we promote the Environmental Technology Best Practice Programme and Waste Minimisation Clubs.
- We have carried out a National Waste Production Survey (see Issue 2.19).
- We are implementing Producer Responsibility legislation which aims to reduce the amount of packaging waste going to landfill (see Appendix 5.10).
- We have produced our Waste Minimisation Video and good practice guide which we use to promote best practice.
- The five District Councils in Somerset have recently agreed to work together on a joint Waste Strategy for household waste, dealing with both waste collection and management throughout the county.
- Taunton Deane Borough Council operates an organic waste collection from householders for their garden wastes. The material is collected in and around the towns and villages in the borough and is composted at Wyvern Waste Services', Priorswood site in Taunton. The scheme has proved very successful over the last few years, collecting 900 tonnes from April to September in 1998. This service complements the collection of garden waste from waste recycling centres which currently receive approximately 6000 tonnes a year.

- We will promote best practice for farm waste management in partnership with organisations such as the Farming and Wildlife Advisory Group who are currently giving advice as part of their 'Landwise' Review and the government's Farming and Rural Conservation Agency.
- We will undertake a Pollution Prevention and Waste Minimisation Survey at Comeytrove Trading Estate, Taunton following a significant oil pollution incident from a site. There are approximately 30 small and medium businesses which will benefit from the new integrated approach to environment protection.

Actions	Action By	Cost to Agency (£K)	Financial Year				
			99	00	01	02	03
2.20.1 We will promote the creation of waste minimisation partnerships as appropriate. Contact: Tactical Planning Team Leader	Agency	1	●	●	●	●	●
2.20.2 We will work with Farming and Wildlife Advisory Group, Farming and Rural Conservation Agency and others to give waste minimisation and best practice management advice to farmers. Contact: Tactical Planning Team Leader	Agency, Farming and Wildlife Advisory Group, Farming and Rural Conservation Agency	1	●	●	●	●	●
2.20.3 We will conduct a joint Pollution Prevention/Waste Minimisation survey at Comeytrove Trading Estate. Contact: Environment Protection Team Leader	Agency	1	●	●			

2.21 Issue: Illegal waste disposal

The disposal of controlled waste requires an Agency licence. Illegal activities in the area include fly-tipping and an unlicensed scrapyards. Fly-tipping is defined as: 'The illegal deposit of controlled waste on land (excluding deposits at unlicensed sites designated or adapted for the reception of waste with a view to disposing of it). Fly-tipping can be a problem in this area and is very difficult to control. We rely largely on information supplied by members of the public.

Apart from the usual reasons for fly-tipping such as avoiding commercial waste charges, one reason in the Tone area may be that the Priorswood Civic Site is very busy and cramped. The site has been identified as problematic but any extension to the site can only be progressed via Somerset County Council and the operator, Wyvern Waste Services. The local authorities are responsible for development planning, including waste planning but we are statutory consultees and give them information and technical advice.

We will work with the local authorities to combat and remove fly-tipped waste according to the Memorandum of Understanding of 16 September 1998 between the Agency and the Local Government Association. Forests in the catchment are being particularly targeted. We are developing a partnership with the Forestry Commission and Taunton Deane Borough Council to develop a plan of action to combat fly-tipping incidents and the removal of fly-tipped waste. Fly-tipping of animal carcasses (calves) is a new problem resulting from the crisis in the livestock industry.

One of the few remaining unauthorised scrap-metal yards within the North Wessex area is situated at Chelston, Wellington. Nationally, we are currently pursuing the regularisation of all outstanding scrap-metal/vehicle-dismantling yards.

The operator is in discussion with our North Wessex Area office to establish a new scrapyards at Poole Brickworks, Wellington. We will continue to hold discussions with the operator to ensure the proposed activities fulfil the requirements of Waste Management Licensing. Failure to comply may lead to legal action being considered.

Actions	Action By	Cost to Agency (£K)	Financial Year				
			99	00	01	02	03
2.21.1 We will liaise with the Forestry Commission and Taunton Deane Borough Council to develop a plan to combat fly-tipping. Contact: Environment Protection Team Leader	Agency, Forestry Commission, Taunton Deane Borough Council	0.5	●	●			
2.21.2 We will continue to hold discussions with the scrapyard operator to ensure proposed activities fulfil waste-management licensing requirements. Contact: Waste Licensing Team Leader	Agency	1.0	●	●			
2.21.3 We will work with the local authorities to combat fly-tipping, and remove fly-tipped waste. Contact: Environment Protection Team Leader	Agency, local authorities	0.5	●	●	●	●	●

2.22 Issue: Securing future public water supplies

Water is an essential but finite resource. One of the Agency's roles is to protect the water environment (lakes, rivers and wetlands) from over-abstraction whilst considering the needs of the public, agriculture and industry for water. The Agency is not responsible for the supply of water to households and industry but has a central role in water resources planning in England and Wales. We contribute to protecting the environment by looking at current use of water in the home and at work and the water that is available for these uses without damaging the environment. This may involve correcting any imbalances or over-abstraction. We continue to protect the environment by comparing future demands for water with water availability and balancing the two in an environmentally sustainable manner.

Meeting Current Demand: To manage water resources the Agency issues abstraction licences for specific volumes of water from identified sites. The abstraction licence will include restrictive conditions to control abstraction and prevent adverse environmental impacts. 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. The full nature and impact of changes will not be confirmed until the final papers are approved by Parliament. We will need to implement any changes that arise from this process and amend licensing policies as appropriate.

In 1998, there were 118 active licences in the LEAP area, representing 16,428 million litres of water per year. Ten of these licences are public water supply licences held by Wessex Water Services Limited which equates to 12,978 Million litres of water per year. The remainder are non-public water supply licences which are used for a number of purposes including agricultural and industrial supplies. The majority of the water abstracted is returned to the river system through consented sewage effluent discharges.

Wessex Water is the main water supply company within this Tone LEAP area. However, South West Water Ltd supply a small area in the south-west of the Plan Area.

Meeting Future Demand

Water resource planning is carried out over large geographic areas often extending over several LEAP boundaries. It is therefore difficult to obtain data for a specific LEAP and the precise impact of new development on water resources in the plan area can be difficult to predict. Before any new resources can be developed or existing resources developed further, the Agency must be satisfied that water companies have looked in detail at a range of appropriate options. These include encouraging people to use water more efficiently (demand management), increasing the efficiency of uses of sources (resource management) and increasing efficiency of pipe networks (distribution management) as well as reducing their leakage towards an acceptable level.

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 Wessex Water's domestic customers have the option to have their home metered free of charge. Wessex Water also operate a tariff scheme which metered customers who have a low water use can opt for to make further financial savings. People who have a garden sprinkler are asked to register it with the company and pay for a sprinkler licence but they are not required to have a meter. South West Water's domestic customers have the option to have their home metered at a subsidised price between now and April 2000, after this they will be able to have a meter fitted free of charge. People who have a garden sprinkler are asked to register it with the company on the understanding that they may be metered at a later date.

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. Wessex Water's plan includes details of their free customer supply-pipe repairs and water audits. There are details of the initiatives to encourage business customers to save water such as advice leaflets and tariffs. Wessex Water also have an education officer, who works with and in schools across their area, and a number of education centres for example at Ashford in the neighbouring River Parrett LEAP area. South West Water has published a water efficiency plan that contains strategies to deliver water savings by the customer. Their plan includes advice on how to save water in the home and garden and explains what the company is doing to encourage other bodies, such as the local council and builders, to help the customer save water. Water efficiency advice is also available to business customers. South West Water has a free educational resource pack, *Running Water*, which provides National Curriculum support for 8 to 13 year olds.

Extra resources can be obtained from making savings through reducing leakage. The Water Companies are set leakage targets each year by the Government's financial regulator OFWAT. They are bound to meeting these but can set tighter targets if they wish. Wessex Water have a target of 89.0 million litres a day (ML/d) for 1999 / 2000. Their actual leakage figure for 1997 / 1998 was 109.8 ML/d which was below the OFWAT target for that year. South West Water have a target of 84.0 million litres a day (ML/d) for 1999 / 2000. Their actual leakage figure for 1997 / 1998 was 101.1 ML/d which was below the OFWAT target for that year.

Water companies use areas known as Resource Zones in order to help manage the way in which they supply water. The Tone LEAP area is part of the North Resource Zone which supplies water to most of Somerset and parts of Dorset. The water supplied in the catchment is from a combination of surface and ground water sources dominated by Clatworthy reservoir with smaller abstractions from the Bridgwater and Taunton Canal and the smaller reservoirs in the south of the catchment. The ground water sources tend to be smaller but are still significant as they account for 44.2% of public water supply in the catchment. The impact of the abstraction from the canal and the water lost to the Tone catchment is currently being investigated by the Agency – details of this are given in Issue 2.23. The south-west edge of the Tone LEAP area is part of South West Water's Wimbleball Resource Zone which supplies water to East Devon. The water supplied in the catchment is from a combination of surface and ground water sources dominated by Wimbleball reservoir.

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

- turning taps off, showers rather than baths;
- washer replacement, rapid repair of leaks;
- low flush toilets, normal rather than power showers, water efficient washing machines and dishwashers
- water butts, trigger switches on hose pipe nozzles, drought resistant garden plants, mulch on flower beds to retain moisture and restrict weed growth

The workplace and industry also offers many opportunities to reduce water use (and save money). Measures outlined above may be suitable together with process/site specific measures. Examples of these and other water efficiency measures are detailed in the document *"Saving Water on the Right Tracks II"*, 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 rapid development and take-up of suitable systems there is a need for water quality standards to be established for this use.

Actions	Action By	Cost to Agency (£K)	Financial Year				
			99	00	01	02	03
2.22.1 We will revise the Regional Water Resources Development Strategy based on information received in the water companies' water resources plans. Contact: Regional Senior Water Resources Planner	Agency	4	●	●			

2.23

Issue: Bridgwater and Taunton Canal water resources management

Water is abstracted by British Waterways from the River Tone at Firepool, Taunton, to supply the Bridgwater and Taunton Canal. This abstraction is currently exempt from licensing. Wessex Water Services Ltd abstract from the canal to supply Wessex Water's Durlough Reservoir under a licence held by British Waterways. However, we need to review the canal abstraction as part of the requirements of the Habitats Directive Regulations. (See Issue 2.7) We need to consider if the balance of the water needs between the canal and the Lower Tone is being met by current operation. It is important that sufficient water flows down the canal to supply the Durlough Reservoir abstraction, to reduce the incidence of algal blooms in Bridgwater Docks and lower reaches of the canal and to maintain navigation. It is equally important that the ecology of the River Tone downstream is not adversely affected.

In early 1998 a joint Agency, British Waterways and Wessex Water Technical Group was established to review the water resources management arrangements for the canal. A programme of fieldwork to collect information on flow rates and water quality in the canal was implemented in summer 1998. This work included the installation by British Waterways of an ultrasonic flow-monitoring device in the canal at Bathpool. For the first time this enabled detailed continuous flow data to be collected for the canal. The Environment Agency undertook an extensive programme of flow measurements at other locations on the canal, and took regular water quality measurements from the lower reaches of the canal.

The results from the 1998 monitoring programme are now being considered along with the potential for changes to improve water management in the canal. Having gathered the information from the canal, the balance between the water resource needs of the canal and the Tone downstream of Firepool, (from which water feeds Special Protection Areas and Sites of Special Scientific Interest on Hay Moor and Curry Moor) will need to be carefully considered for future water resource management.

Actions	Action By	Cost to Agency (£K)	Financial Year				
			99	00	01	02	03
2.23.1 We will review water resource management practice for the Bridgwater and Taunton Canal. Contact: Area Water Resources Team Leader	Agency, British Waterways, Wessex Water	5	●	●			
2.23.2 If appropriate we will implement changes to the water management practice, having due regard to the needs of the Canal and the River Tone downstream of Firepool. Contact: Area Water Resources Team Leader	Agency, British Waterways, Wessex Water and English Nature	10	●	●	●	●	●

2.24

Issue: The impact of sewage and unsewered areas

The water companies' improvement plan for the period 1995-2000 is known as Asset Management Plan 2 (AMP2). Asset Management Plan 2 was developed in 1994 along guidelines agreed between the National Rivers Authority (now the Environment Agency), the Department of the Environment (now the Department of the Environment, Transport and the Regions, DETR), the water services companies and the Office of Water Services (OFWAT).

OFWAT is undertaking a review of water prices which will result in a review of improvements required for the period 2000-2005; the outcome of this will be Asset Management Plan 3. The Environment Agency has been reviewing, for agreement with Department of the Environment, Transport and Regions, those sewage discharges where improvement is required. The Department of the Environment, Transport and the Regions have now considered our proposals and have translated these into detailed environmental obligations, where we expect the improvements to take place by 2005. Many of these schemes will be delivered before 2005; the water companies are currently preparing their Strategic Business Plans which will confirm the delivery dates of these schemes.

First time sewerage schemes for Blagdon Hill and Pitminster are to be included in Wessex Water's Strategic Business Plan, called Asset Management Plan 3. We will continue to monitor the progress of this scheme which is likely to come in by 2000.

We expect improvements to the following continuous discharges to be completed before 2005:

Taunton (Ham) sewage treatment works is causing River Quality Objective and Long Term River Quality Objective failure in the River Tone. We expect improvements to this sewage treatment works to be completed by 2005. We are likely to have to review this discharge under the Habitats Directive Regulations. (See Issue 2.7)

Modelling has indicated that Maundown Water Treatment Works has a harmful effect on water quality in a tributary of the Hillfarrance Brook. We expect improvements to be completed in Asset Management Plan 3.

Intermittent discharges - Recent work undertaken by the Agency and Wessex Water has identified a number of intermittent discharges (combined sewer overflows, settled storm overflows and pumping stations) within the Tone catchment which may be causing either aesthetic or water quality problems in the receiving watercourse. These will require remedial work by Wessex Water, which we expect to be completed by 2005. The Agency and Wessex Water will agree the prioritisation of these schemes.

Intermittent discharges from Galmington Surface Water Outfall may be causing or contributing to aesthetic and water quality problems in the River Tone. We are negotiating with Wessex Water's liaison group to install an interceptor to remove any debris and oil from entering the watercourse via the outfall.

Wrong Connections - In urban areas where sewage and surface water are carried in separate sewers, pollution of watercourses occurs when domestic appliances including toilets and washing machines are illegally plumbed into surface water drains instead of the foul sewer. Wrongly connected surface water drains also put considerable pressure on the foul sewer system causing overflows to operate prematurely thus causing pollution to watercourses. The problem has been particularly bad in parts of Taunton for example at Rowbarton and St Patricks Close. We are working in conjunction with Taunton Deane Borough Council to trace these wrong connections and get them corrected.

Actions	Action By	Cost to Agency (£K)	Financial Year				
			99	00	01	02	03
2.24.1 We will work with Wessex Water to ensure that they carry out proposed improvement to Taunton (Ham) sewage treatment works by 2005. We will monitor the effectiveness of the improvements. Contact: Tactical Planning Team Leader	Agency	1	●	●	●	●	●
2.24.2 We will work with Wessex Water to ensure that they carry out proposed improvement to Maundown water treatment works by 2005. Timings are still unknown. We will monitor the effectiveness of the improvements. Contact: Tactical Planning Team Leader	Agency	1					

Actions	Action By	Cost to Agency (£K)	Financial Year				
			99	00	01	02	03
2.24.3 We are negotiating with Wessex Water to secure improvements to Galmington Surface Water outfall on the River Tone. Contact: Environment Protection Team Leader	Agency	0.5	●	●	●	●	●
2.24.4 We will monitor Wessex Water's progress in improving a number of intermittent discharges by 2005 and we will assess the impact of the changes. Contact: Tactical Planning Team Leader	Agency	1		●	●	●	●
2.24.5 We will work with Taunton Deane Borough Council to identify wrong connections in the catchment and ensure correct connections are made. Contact: Environment Protection Team Leader	Agency	0.5	●	●	●	●	●
2.24.6 We will work with Wessex Water to ensure that they implement the Blagdon Hill and Pitminster Sewerage Scheme by 2005. Contact: Tactical Planning Team Leader	Agency	1	●	●	●	●	●

2.25

Issue: Promotion of sustainable recreation

We have a duty to promote the use of inland and coastal waters and associated land for recreational purposes, and to take into account the needs of the chronically sick and disabled. We also have a duty to make best recreational use of Agency-owned land and to take account of recreation in the work of other functions of the Agency.

The River Tone catchment is essentially rural and undeveloped but it is used for informal recreation especially walking, cycling, angling and some canoeing and boating. The Tone in Taunton and the Bridgwater & Taunton Canal provide an important focus of recreational use popular with walkers, anglers and boat users. The Canal is owned and managed by British Waterways though we monitor its water quality and fish stocks. Clatworthy Reservoir in the headwaters of the Tone is an important site for fly-fishing and walking.

Taunton Deane Borough Council is developing and improving routes for walkers and in some instances cyclists by waymarking and the provision of interpretation facilities for example our work with Taunton Deane Borough Council at Childrens Wood, Taunton. We will promote safe and environmentally sustainable recreation within the river corridor where appropriate by working with local authorities and others. We will work to ensure that local authorities include appropriate policies in their Local Development Plans.

We support the popular activity of angling largely through our work to maintain and improve fisheries.

The Agency owns significant lengths of the River Tone and its banks downstream of Taunton but none at all in the upper catchment. We will be writing conservation and recreation management plans for the land in our control, in consultation with others including local community and recreation groups. We will balance the often conflicting interests of the need for recreation with our duty to safeguard the river environment and to conserve wildlife.

We are working in collaboration with other parties to develop strategic sustainable transport routes such as the Sustrans Route 3 which runs from Bristol, through Bridgwater and Taunton, to Penzance.

Sustainability is an underlying theme to the activities of the Agency and the promotion of recreation will be balanced with other considerations such as wildlife interest.

There are a number of key organisations with an interest in the countryside and water recreation and we will work in partnership where appropriate to provide sustainable recreation.

Actions	Action By	Cost to Agency (£K)	Financial Year				
			99	00	01	02	03
2.25.1 We will review the recreational potential of Agency land on the lower River Tone. Contact: Conservation Team Leader	Agency	Unknown		●	●		
2.25.2 We will liaise with local planning authorities to ensure appropriate policies are included in Local Development Plans and Community Plans. Contact: Conservation Team Leader	Local Authorities, Agency	Unknown	●	●	●	●	●
2.25.3 We will work with other bodies to provide sustainable water-based recreation and amenity. Contact: Conservation and Fisheries Team Leader	Agency, Local Authorities, Angling Clubs, British Canoe Union, Sports Council, Countryside Agency, British Waterways	Unknown	●	●	●	●	●

3. Education

We recognise that broad-based education covering the community, educational and industrial sectors will result in a more informed society that is better able to understand the environment, its needs, and the impact of society's activities upon it. In particular, there is a need to:

- educate young people to equip them to make informed judgements about future environmental decisions;
- educate industry through consultation, collaborative activities and targeted campaigns to promote a culture of prevention rather than cure;
- raise public awareness of environmental issues to engender in society a common ownership of the environment and its challenges.

Each region has recently appointed an Education Co-ordinator to promote our education strategy at a local level. Our Customer Services Department can provide a list of available resources for schools. This includes packs relating to Key Stages 1 and 2/3 and activity booklets for younger children. We are also looking into more efficient ways to deliver environmental education for example offering training days to teachers. We support the Eco-schools initiative and have staff members who are trained as assessors for the scheme. Within Somerset the Agency has contributed to 'The Big Green Bus' project. This scheme is operated by Somerset Environmental Education Forum and provides grants to schools to cover the cost of transport to sites of environmental interest, such as landfills and organic farms.

Currently, we provide a wide range of information to all sectors of society – a leaflet is available which details the types of information that we hold. In addition we exhibit at shows, such as the Royal Bath and West show and the Eco-Living event held by the Somerset Wildlife Trust. We are also involved in planning a workshop, 'Your Waste Your Choice' which will introduce schoolchildren from across Somerset to waste planning and waste management issues.

LEAPs are in themselves an educational resource within a local area. Each LEAP is guided by a Steering Group whose members are drawn from our key customers locally and include: local authorities, industry, waste management industry, farming interests, the Farming and Wildlife Advisory Group, the National Farmers Union, the Countryside Landowners Association, English Nature, Wildlife Trusts, fisheries interests, the Ramblers Association, British Waterways and Wessex Water.

A list of publications is available on request from the Customer Services Centre at local Environment Agency offices.

4. Protection Through Partnership

The Agency works in partnership with many organisations and individuals concerned with the protection and enhancement of the environment. In the United Kingdom as a whole much has been achieved already but much more is possible by working closely with others. The Agency is essentially a regulatory body and does not give grants (but see Section 4.1.11), so to achieve some of its aims it must co-operate with others such as the local authorities and the Ministry of Agriculture, Fisheries and Food to harness their financial resources and technical expertise. The Agency can also work towards its objectives by working with voluntary groups such as the wildlife trusts and recreational associations. In some cases partnerships are already well established with other statutory bodies, especially where there is joint responsibility, such as waste management.

4.1 Partnerships and opportunities

This section outlines some of these partnerships and indicates opportunities for new initiatives.

4.1.1 Joint Collaborative Project – a ‘farmer-led’ approach (See Map 1) The Somerset Farming and Wildlife Advisory Group approached the Agency to set up a collaborative project to act upon farming and land-owning issues from the Tone Catchment Management Plan that were not being tackled by the Agency itself. The main thrust of the Project was to address problems of diffuse pollution from agriculture and to enhance riverside habitat. The decline in dairy and stock farming and increased arable area on productive, sandy soils has led to a severe soil erosion problem which can block roads and pollute the river and its tributaries. A ‘farmer-led’ approach has been taken by employing a farmer from the catchment as a Project Officer. He has been able to draw on his own experience of farming 400 acres of arable, beef and sheep in the area to help other farmers with environmental problems arising from farming operations.

After 18 months of the Project, the Farming and Wildlife Advisory Group has delivered advice to nearly a third of the farmers in the whole catchment, but two-thirds of the farmers in the soil erosion priority zone. Awareness of soil erosion has been heightened amongst the farming community and some have already taken measures to reduce risk of erosion or environmental damage. Buffer zones have been placed in key locations, crop rotations altered and non-inversion tillage introduced. As concerns about soil erosion have increased, Somerset County Council, WS Atkins Highways Management and Taunton Deane Borough Council have got involved in the Project. In addition, the Project has instigated numerous habitat enhancement works along the main river and its tributaries in partnership with Somerset Wildlife Trust, English Nature, Taunton Fly-fishing Club and Somerset Otter Group.

The aim of the Project in the future is to place soil erosion high on the agenda for farm decision making and propose a programme of measures to reduce erosion for all those farming in high-risk areas. Working with the regulatory bodies, the Farming and Wildlife Advisory Group hopes that every farmer will soon be reducing erosion risk. The Project will continue to highlight farming operations such as inadequate waste management and disposal, and pesticide spray drift that are causing environmental damage. As riverside and other farmland habitats are closely linked to whole catchment water quality, the Project will continue encouraging farmers to enhance these areas. It is proposed to take this ‘farmer-led’ approach into neighbouring catchments. (See Issue 2.3).

4.1.2 Amenity and recreation initiatives Local authorities often own the riverside land in towns and we work with them together with developers and other riparian owners on schemes to enhance the town centre river corridor with, for example, landscaping, walkways and riverside seating. As part of such schemes nature conservation can be furthered by creating wildlife habitats including in some cases achieving a more natural river channel.

We will promote safe recreation within the river corridor where appropriate by working with local authorities and others such as the Ramblers Association, recreational users and the British Canoe Union. We will work with other organisations to try to resolve conflicts between users.

4.1.3 Working with Local Authorities We work with Local Authority Environmental Health Officers by way of a Somerset Water Studies Group on common issues such as pesticide contamination of private drinking water supplies. This has resulted in a monitoring programme across the Somerset area.

We hold regular liaison meetings with Taunton Deane Borough Council to discuss matters of common concern such as sewage, litter and associated environmental issues.

Staff volunteers have taken part in a 'litter-pick' along the River Tone at the Hankridge Farm development in Taunton. This was organised by Taunton Deane Borough Council as part of the National Spring Clean campaign in 1999.

4.1.4 Local planning authority development plans Although we can control some of the things which influence the quality of the environment or affect flood risk we have very little direct control over the way that land is developed. This is the responsibility of local planning authorities. Local planning authorities prepare statutory development plans. The policies in these plans will guide the way that land is developed in the future.

We have recently produced a document called 'Environmental Planning Issues in the North Wessex Area' which details local issues of interest to planning authorities. We also publish guidance for local planning authorities to encourage them to adopt policies that protect the water environment from the harmful effects of development and where possible enhance it. Where we can, we will reinforce these policies when we comment on planning matters or if we are making our own decisions. We also advise planning authorities on planning matters related to industrial processes, waste management and the storage, use and disposal of radioactive material. We are working closely with Somerset County Council on the strategic environmental appraisal of their Minerals Local Plan.

4.1.5 Local Agenda 21 (LA21) Local Agenda 21 is an opportunity for people to say what they value about their surroundings and what they would like to see for their local environment in the 21st century. Across the catchment, all local authorities are assisting their communities in developing local strategies and action plans which work towards sustainable development.

The approach adopted varies between districts. For example, in Taunton Deane a series of working groups were set up to look at issues such as transport and access to the countryside. A set of environmental indicators has also been chosen by local people to monitor which aspects of the environment are getting better or worse.

We have taken part in some of the district and county groups, such as the Sustainable Somerset Forum and can provide scientific data relevant to the environmental indicators, such as river water quality. We can also supply other information that Local Agenda 21 groups may find useful. A leaflet giving further details is available from our Customer Contact Team.

4.1.6 Air Quality The Agency and local authorities are both responsible for aspects of air quality monitoring and management, although local authorities are responsible for producing and implementing Local Air Quality Management Plans. We will build partnerships with them to develop and implement their Local Air Quality Management Plans.

4.1.7 Working with businesses We are working in partnership with local businesses to promote pollution prevention and waste minimisation. Examples include:

- Regular meetings with Wessex Water to discuss issues such as their spending plans for environmental improvements (the Asset Management Plan 2 and Asset Management Plan 3 programmes and potable water supply problems). These meetings occur at all levels of the Agency and provide a platform to progress issues of mutual interest and concern.
- Our work with local waste operators concerning matters of public concern, for example we hold regular meetings with Poole Landfill Liaison Group. This group includes councillors from Nynehead and West Buckland Parish Councils and local residents. We also hold meetings with waste operators regarding waste licensing and enforcement issues.
- Regular meetings throughout Somerset with Wyvern Waste.
- Meetings with Taunton Deane Borough Council's Environmental Health Officers regarding matters of mutual interest.

We are working in partnership with local business to promote pollution prevention and waste minimisation. Examples include:

- Our oil care campaign;
- Our training video for construction workers;
- Pollution prevention guidelines which give advice relating to specific industries and activities e.g. dairies, vehicle service centres, surface water drainage;

- The promotion of the Government's Environmental Technology Best Practice Programme. Industries can call Freephone 0800 585794 for up to two hours of free advice on saving money through waste minimisation and energy efficiency measures;
- Best Management Practices. These are environmentally friendly methods of treating urban runoff, such as grass swales, reedbeds and retention ponds, which offer opportunities for habitat creation. A leaflet and video, 'Nature's Way' are available;
- Farm waste management plans developed with farms and the Farming and Rural Conservation Agency;
- Our work with the Farming and Wildlife Advisory Group to promote environmentally friendly farming practices, such as the use of buffer strips which can help to reduce soil erosion and runoff of fertilisers and pesticides.

4.1.8 Conservation The Agency is participating in local and regional Biodiversity Action Plans and is committed to conserving important habitats and to maintaining and improving the biodiversity of rivers and wetlands. We will continue our presumption against further impoundments (weirs or sluices) and we will examine options for altering and removing them. We are working in partnership with FWAG and Somerset Wildlife Trust to promote best farming practices to reduce the amount of diffuse pollution entering watercourses in this catchment.

Alder trees are a wetland species and often grow next to rivers. Their roots can suffer from a lethal disease called *Phytophthora* (see 2.9). We are seeking to establish the extent of this problem, to identify management options and to assess its long-term impact on the river corridor.

4.1.9 Water Resources The Agency is responsible for the environmental regulation of the water companies of England and Wales whilst OFWAT is responsible for the financial regulation. We work with the water companies in order to ensure best possible use of available resources.

OFWAT is undertaking a review of water prices that will result in a review of improvements required of water companies for the period 2000–2005; the outcome of this will be 'Asset Management Plan 3' (AMP3). The Agency's proposals for the National Environment Programme for water companies from 2000 to 2005 were submitted to Government in May 1998 in the document *A Price Worth Paying*. Following consultation with the Agency and OFWAT, the Department of the Environment, Transport and the Regions published guidance in September to OFWAT for the environmental and quality objectives to be achieved by the water industry in the period 2000 to 2005; this is the report *Raising the Quality*. This guidance has now been translated into detailed environmental obligations which have been agreed by the Secretary of State for each water company. There are no water resources obligations within the Tone LEAP area.

Asset Management Plan 3 also requires the water companies to revise their water demand forecasts, review their resource availability and consider any potential resource options to meet forecasted deficits within the planning horizon. In parallel with this the Agency required the water companies to complete Water Resource Plans by March 1999. The Water Resource Plans require water companies to produce demand forecasts and compare them with their available resources for the next 25 years. Potential demand or resource-management options, including leakage reduction, have to be considered, and, if necessary, any resource-development options which may be required to meet the forecast demand. These plans have been received and a report on them, *Planning Public Water Supplies*, was sent to the Department of the Environment, Transport and the Regions in June 1999. The companies will be expected to update these plans on an annual basis and the report also details the main changes the Agency wishes to see incorporated in the revisions of the plans.

4.1.10 Pollution incidents We are working in partnership with the public to identify pollution incidents through our Pollution Hotline 0800 80 70 60.

4.1.11 'Make a Difference' environmental improvement projects Although we are not a grant awarding body, for a few years up to 1999 we created a small fund to finance a few low to medium cost projects each year which enhanced the environment i.e. 'Make a Difference' (MAD). Where possible we sought partners to provide matching funding. However from 1999, and for the foreseeable future, we have diverted all this money to implementing the actions identified with the Somerset Levels and Moors Action Plan.

We are still looking for opportunities to work in partnership with other bodies. We are particularly keen to secure external funding for 'Make a Difference' and LEAP actions, but in most cases our contribution would be limited to technical expertise. In some cases funding may be possible within existing budgets for our core work. The main areas for projects are: Biodiversity, Waste Minimisation, Recreation, Local Agenda 21 and Land Management.

The list below gives some examples of the 'Make a Difference' (MAD) projects which are or have been co-ordinated by the Agency in this area.

- Tone Catchment Project in Collaboration with the Somerset Farming and Wildlife Advisory Group to combat diffuse pollution and increased soil erosion caused by changes in agricultural practices. The aims of the project are to improve land management, waste management practices and riparian habitat diversity. This project is continuing; see section 4.1.1.
- Biodiversity projects – creation of otter holts and the control of riparian invasive weeds. There is currently no Agency funding available for these projects.
- Biodiversity Action Plans – water vole surveys; phase II of alien species survey; crayfish and otter habitat protection/creation; headwater streams survey.
- Agency Issues Maps – to produce maps for all local planning authorities in the area to provide them with a reference tool for Agency Issues within their area. This project is continuing but over a longer period.
- Waste Prevention and Minimisation in North Wessex – focus on industry and commerce. A series of partnership projects with green business/waste minimisation clubs, including: waste auditing; promotion of good practice; setting up a waste exchange database/network. Initial funding is required to kick-start the projects that will become self-funding.

4.2

The Agency's own Environmental Management.

The Agency is committed to the following environmental management practices:

4.2.1 Resources To ensure the allocation of resources at all levels to achieve the implementation of effective environmental management action throughout the Environment Agency; to make line management responsible for the achievement of objectives and performance targets.

4.2.2 Targets To support continuous environmental improvement by the establishment of demanding but achievable and measurable environmental performance targets determined and reviewed annually. These targets cover aspects of energy and resource use, waste minimisation and recycling. Our current national targets are set out in the table on page 39.

Target No	Target	Completion Date
Legislative Compliance		
1	Continue to ensure full compliance of all Agency sites with all relevant environmental legislation by undertaking a second round of "Do It Yourself" reviews and reporting, investigating and rectifying all environmental incidents caused by our own activities.	30 November 1999.
Energy Management		
2	Reduce energy use in offices and depots by 20% measured as kWh/m ² compared to Energy Efficiency Office typical or 1991/2 consumption, whichever is lower.	31 March 2000
3	Compile "Green Transport Plans" to reduce transport impacts at all key sites, including our Bridgwater office, and to reduce mileage on Agency business (lease, badged, casual, essential, etc.) by 15% on 1998/9 figures.	Green Transport Plans by 30 November 1999 Mileage by 31 March 2000
4	Establish miles per gallon (mpg) benchmarks for different vehicle types and fix mpg at 1998/9 levels.	31 March 2000
Resource Management		
5	Implement resource and waste management plans at each Agency site. Specifically to	Water by 31 September 1999 Waste by 31 March 2000
	<ul style="list-style-type: none"> ● Reduce water use in offices and depots to 30% below accepted norm for this type of office or 1996/7 consumption, whichever is higher; 	
6	<ul style="list-style-type: none"> ● Reduce residual waste by 15% on 1998/9 levels. 	
7	Ensure that at least 20% of construction aggregates used are from recycled/secondary sources.	31 March 2000

5. Appendices

5.1 Earlier Plans

In September 1995 the former National Rivers Authority published the River Tone Catchment Management Plan Consultation Report. The National Rivers Authority consulted 202 organisations and individuals directly about the issues which are outlined in the River Tone Catchment Management Plan Action Plan and received 46 formal responses before publishing the Action Plan and subsequent Annual Review. In April 1996 the National Rivers Authority became part of the new Environment Agency which took over the National Rivers Authority's catchment plans. The Environment Agency now hopes to build on this good work by widening the scope of environmental issues tackled to include its additional areas of responsibility (mainly waste management and the regulation of heavy industry) by producing this Local Environment Agency Plan (LEAP), the first for the River Tone area. The Agency also hopes to achieve greater involvement of interested organisations and individuals.

5.2 Our corporate aims are:

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

We will do this by:

- being open and consulting others about our work
- basing our decisions around sound science and research
- valuing and developing our employees and
- being efficient and business like in all we do.

5.3 This LEAP and our national 'Environmental Strategy for the Millennium and Beyond'.

In September 1997 the Agency published its first national integrated environmental strategy entitled 'An Environmental Strategy for the Millennium and Beyond', subsequently referred to in this plan as the Millennium Strategy. This LEAP translates these national policies and objectives into **local actions** in the River Tone area. We will deliver this strategy at a local level through dialogue between ourselves and other organisations involved in the protection and management of our environment.

5.4

Duties, powers and interests of the Agency

The Environment Agency has a wide range of interests in the areas of water management, waste management and pollution prevention and control. Whilst many of these interests are supported by statutory duties and powers, much of the Agency's work is advisory, with the relevant powers resting with other bodies such as local planning authorities. The following table therefore summarises the Agency's duties, powers and interests and their relationship to land-use planning.

Agency Duty	The Agency has powers to:	The Agency has an interest (but no powers) in:	Partnership
<p>Water Resources</p> <p>The Agency has a duty to conserve, redistribute, augment and secure the proper use of water resources.</p>	<ul style="list-style-type: none"> ● Grant or vary water abstraction and impoundment licences on application. ● Revoke or vary existing licences to reinstate flows or levels to surface waters or groundwater which have become depleted as a result of abstraction, and are subject to a liability for compensation. 	<ul style="list-style-type: none"> ● 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 proposed major developments. 	<ul style="list-style-type: none"> ● 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. ● We use our position as a statutory consultee to the planning authorities to secure conditions and agreements to protect the water environment. ● We work closely with developers and industry to encourage the protection and good management of water resources.

Agency Duty	The Agency has powers to:	The Agency has an interest (but no powers) in:	Partnership
<p>Flood Defence</p> <p>The Agency has a duty to exercise general supervision over all matters relating to flood defence throughout each catchment.</p>	<ul style="list-style-type: none"> ● Control, through Land Drainage consents, development within 8 m of main river (16 m for tidal Thames and tributaries) (Water Resources Act, 1991 Section 109) or construction of a structure that would affect the flow of an ordinary watercourse (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. ● Issue flood warning relating to main river to the public, local authorities and the police. ● Consent mineral working within 16 m of main rivers. 	<ul style="list-style-type: none"> ● Granting of planning permission throughout a catchment but especially floodplains where development can significantly increase flood risk. This permission is granted by local planning authorities. ● Installation of surface water source control measures e.g. flood attenuation structures. ● Supervising the maintenance of ordinary watercourses which is a local authority remit, but may impact on main 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. 	<p>As a statutory consultee on planning applications within main river floodplains the Agency offers advice based on knowledge of flood risk. It also advises on the environmental impacts of proposed floodplain development.</p> <p>The Agency will encourage best practice, including source control measures and common standards, among local authorities and riparian owners to protect and enhance the environment. The Agency works with the civil authorities to prepare flood warning dissemination plans and supports their endeavours to protect communities at risk.</p>

Water Quality

The Agency has a duty to monitor, protect, manage and, where possible, enhance the quality of all controlled waters including rivers, groundwaters, lakes, canals, estuaries and coastal waters through the prevention and control of pollution.

- Issue discharge consents to control pollution loads in controlled waters.
- Regulate discharges to controlled waters in respect of water quality through the issue and enforcement of discharge consents.
- Issue 'works notices' where action is required to reduce the risk of pollution.
- Prosecute polluters and recover the costs of clean-up operations.

- The control of run-off from roads and highways. This is a Highway Agency duty.
- The greater use of source control measures to reduce pollution by surface water runoff.
- Prevention and education campaigns to reduce pollution incidents.

The Agency will liaise with local authorities, developers, the Highways Agency, industry and agriculture to promote pollution prevention and the adoption of source control measures. As a statutory consultee on planning applications, the Agency will advise local planning authorities on the water quality impact of proposed developments.

Agency Duty	The Agency has powers to:	The Agency has an interest (but no powers) in:	Partnership
<p>Air Quality</p> <p>The Agency has a duty to implement Part 1 of the Environment Protection Act 1990.</p>	<ul style="list-style-type: none"> ● 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, Best Available Technology Not Entailing Excessive Cost and Best Practicable Environmental Option. ● Have regard to the government's National Air Quality Strategy when setting standards for the releases to air from industrial processes. 	<ul style="list-style-type: none"> ● The vast number of smaller industrial processes which are controlled by local authorities. ● Control over vehicular emissions and transport planning. 	<p>The Agency provides data on Integrated Pollution Control 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.</p>

Radioactive Substances

<p>The Agency has a duty under the Radioactive Substances Act 1993 to regulate the use of radioactive materials and the disposal of radioactive waste.</p>	<ul style="list-style-type: none"> ● Issue certificates to users of radioactive materials and disposers of radioactive waste, with an overall objective of protecting members of the public. 	<ul style="list-style-type: none"> ● The health effects of radiation. 	<p>The Agency will work with users of the radioactive materials to ensure that radioactive wastes are not unnecessarily created, and that they are safely and appropriately disposed of. The Agency will work with the Ministry of Agriculture Fisheries and Food 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 Health and Safety Executive of worker protection issues at non-nuclear sites.</p>
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Agency Duty	The Agency has powers to:	The Agency has an interest (but no powers) in:	Partnership
<p>Waste Management</p> <p>The Agency has a duty to licence and regulate the management of waste, including the treatment, storage, transport and disposal of controlled waste, to prevent pollution of the environment, harm to public health or detriment to local amenities.</p>	<ul style="list-style-type: none"> ● Grant licences subject to conditions ● Refuse licence applications if we are concerned that activities will pollute the environment, harm human health or that the applicant is not a 'fit and proper person'. ● Vary waste management licence conditions. ● Suspend and revoke licences. ● Investigate and prosecute illegal waste management operations. ● Regulate Producer Responsibility Regulations 	<ul style="list-style-type: none"> ● The siting and granting of planning permission for waste management facilities. The waste industry and local planning authorities conduct this. The Agency, as a statutory consultee on planning applications, can advise on such matters. 	<p>The Agency will work with waste producers, the waste management industry and local authorities to reduce the amount of waste produced, increase re-use and recycling and improve standards of disposal.</p>
<p>Contaminated Land</p> <p>The Agency has a duty to develop an integrated approach to the prevention and control of land contamination ensuring that remediation is proportionate to risks and cost-effective in terms of the economy and environment.</p>	<ul style="list-style-type: none"> ● Regulate the remediation of contaminated land designated as special sites. ● Prevent future land contamination by means of its Integrated Pollution Control, Water Quality and other statutory powers. ● Report on the state of contaminated land. 	<ul style="list-style-type: none"> ● Securing with others, including local authorities, landowners and developers, the safe remediation of contaminated land. 	<p>The Agency supports land remediation and will promote this with developers and local authorities and other stakeholders.</p>
<p>Conservation</p> <p>The Agency will further conservation, wherever possible, when carrying out water management functions; have regard to conservation when carrying out pollution control functions; and promote the conservation of flora and fauna which are dependent on an aquatic environment.</p>	<ul style="list-style-type: none"> ● 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. 	<ul style="list-style-type: none"> ● 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 United Kingdom Biodiversity Plan for which it is the contact point for 12 species and one habitat. 	<p>The Agency supports action to sustain or improve natural and man-made assets so that they are made available for the benefit of present and future generations. Many development schemes have significant implications for conservation. The Agency will work with developers, local authorities, conservation bodies and landowners to conserve and enhance biodiversity.</p>

Agency Duty	The Agency has powers to:	The Agency has an interest (but no powers) in:	Partnership
<p>Landscape</p> <p>The Agency will further landscape conservation and enhancement when carrying out water management functions; have regard to the landscape when carrying out pollution control functions; and promote the conservation and enhancement of the natural beauty of rivers and associated land.</p>	<ul style="list-style-type: none"> ● 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. 	<ul style="list-style-type: none"> ● The landscape impact of new development, particularly within river corridors. Local planning authorities controls this. 	<p>The Agency produces River Landscape Assessments and Design Guidelines which it uses when working with local authorities and developers to conserve and enhance diverse river landscapes.</p>
<p>Archaeology</p> <p>The Agency has a duty to consider the impact of all of its regulatory, operational and advising activities upon archaeology and heritage, and implement mitigation and enhancement measures where appropriate.</p>	<ul style="list-style-type: none"> ● Promote its archaeological objectives through the exercise of its water management and pollution control powers and duties. 	<ul style="list-style-type: none"> ● Direct protection or management of sites of archaeological or heritage interest. This is carried out by local planning authorities, County Archaeologists and English Heritage. 	<p>The Agency will liaise with those organisations which have direct control over archaeological and heritage issues to assist in the conservation and enhancement of these interests.</p>
<p>Fisheries</p> <p>The Agency has a duty to maintain, improve and develop salmon, trout, freshwater and eel fisheries.</p>	<ul style="list-style-type: none"> ● Regulate fisheries by a system of licensing. ● Make and enforce fisheries byelaws to prevent illegal fishing. ● Promote the free passage of fish and consent fish passes. ● Monitor fisheries and enforce measures to prevent fish entrainment in abstractions. ● Promote its fisheries duty by means of land drainage consents, water abstraction applications and discharge applications. 	<ul style="list-style-type: none"> ● The determination of planning applications which could affect fisheries. 	<p>Many development schemes have significant implications for fisheries. The Agency will work with anglers, riparian owners, developers and local authorities to protect fisheries.</p>

Agency Duty	The Agency has powers to:	The Agency has an interest (but no powers) in:	Partnership
Recreation			
The Agency has a duty to promote rivers and water space for recreational use.	<ul style="list-style-type: none"> ● The Agency contributes towards its recreation duty through the exercise of its statutory powers and duties in water management. 	<ul style="list-style-type: none"> ● Promotion of water sports. This is carried out by the Sports Council and other sports bodies. 	The Agency will work with the Countryside Commission, the Sports Council, British Waterways and other recreational and amenity organisations to optimise recreational use of the water environment.

5.5 Air Quality

In March 1997 the Government published a national strategy for air quality including:

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

We will be working closely with local authorities to help achieve the objectives of the National Air Quality Strategy, principally through our regulation of emissions to air from controlled ('part A') major industrial processes under Integrated Pollution Control (IPC). Local authorities are responsible for the regulation of smaller, less complex ('Part B') industrial processes and reducing traffic pollution.

Air quality standards are 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 they will make action plans to improve air quality in these areas.

In January 1999, the government announced a revision of the National Air Quality Strategy targets for airborne particles. The proposed air quality changes include levels of benzene, 1,3 – butadiene, carbon monoxide, lead, nitrogen dioxide, ozone, sulphur dioxide and particles (PM₁₀) (particulate matter in the 10 - 20 micron range). The following table illustrates the proposed air quality target changes.

Proposed air quality target changes

Pollutant	Change
benzene	5 parts per billion objective brought forward from 2005 to 2003. Also new 1 parts per billion 'indicative' level for 2005.
1,3 – butadiene	1 parts per billion objective brought forward from 2005 to 2003
carbon monoxide	10 parts per million objective brought forward from 2005 to 2003
lead	0.5 µg/m ³ objective brought forward from 2005 to 2004. Tighter target of 0.25 µg/m ³ from 2008.
nitrogen dioxide	Hourly objective tightened from 150 to 105 parts per billion. New annual objective for protecting vegetation.
ozone	No change

Pollutant	Change
sulphur dioxide	New 1-hour objective of 131 parts per billion and new objectives for protecting ecosystems, in line with EU legislation
particles (PM ₁₀)	Permitted exceedences of 50 µg/m ³ (24-hour mean) objective raised from 4 – 35 days per year. Deadline brought forward from 2005 to 2004, plus new annual objective of 40 µg/m ³ .

The existing National Air Quality Strategy objective for air pollutants specifies a standard of 50 µg/m³, measured as a 24-hour average, with four days of exceedences permitted per year. However, many local authorities embarking on their statutory air reviews are unable to keep the particulate levels within the prescribed limit. Evidence is emerging that pollution episodes are often exacerbated due to their coinciding with easterly winds, which bring polluted air from continental Europe. In response to these concerns, the government is proposing to widen the leeway from four days to as many as 35 days per year in line with more lenient EU standards.

Various EC legislation, the Expert Panel on Air Quality Standards and the World Health Organisation have set standards for different measures of NO_x emissions. The United Kingdom Government has decided to tighten the accepted hourly mean of 150 parts per billion to 105 parts per billion as the standard for nitrogen dioxide, with the achievement of the value by 2005. The revised objective has been tightened in order to protect vegetation from the damaging effect of nitrogen dioxide.

In order to meet Government standards, reductions in NO_x emissions from road transport of the order of 48-62% will be required on 1995 levels in background urban locations and perhaps in excess of 70% at roadside locations.

5.6

Our River Quality Objectives

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

We have set River Quality Objectives using a classification scheme known as the River Ecosystem (RE) Classification which comprises five hierarchical classes as summarised below.

River Quality Objective (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.

We manage water quality by setting targets called River Quality Objectives. The River Quality Objectives we have set must be achievable and sustainable. We must be able to identify what needs to be done to meet the River Quality Objective and to ensure as far as practicable that water quality can be maintained at this level in the future.

Where we are unable to identify solutions or resources to resolve current water quality problems, we may also have set a Long Term River Quality Objective. We will measure compliance against River Quality Objectives but use Long Term River Quality Objectives 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 a River Quality Objective. We will set aside data where high concentrations of metals or low pH are caused by the natural geology of the LEAP area. This allows us to protect good water quality reflected by other parameters in the RE classification. There are no set asides in the 1998 classification of the Tone catchment.

The rivers of the Tone catchment have been divided into 30 classified stretches and the River Quality Objectives that we have set are outlined in the table below, along with compliance with these objectives in 1998. The assessment of 1998 compliance with River Quality Objectives is based on three years of routine monitoring data from the Public Register collected between 1996 and 1998. We have shown failures to meet River Quality Objectives as significant and marginal failures. Significant failures are those where we are 95% certain that the river stretch has failed to meet its River Quality Objective. Marginal Failures are those where we are less certain (between 50% and 95%) that the stretch has failed to meet its River Quality Objective.

Of the 30 monitored river stretches (184.7 km) in the Tone catchment there are two stretches (6.8 km) which significantly fail to meet their River Quality Objective, and 5 stretches (28.6 km of river) which marginally fail to meet their current River Quality Objective. We have also assessed whether river stretches meet their long term River Quality Objective. There is one stretch (2.4 km) which significantly fails to meet its long term River Quality Objective and no stretches which marginally fail to meet their long term River Quality Objective.

River name	Public Stretch Name	River Quality Objective [Long Term River Quality Objective]	Compliance (1998)
Tone	Up Stream Clatworthy Reservoir-Huish Champflower	1	Marginal fail Total Ammonium¹
Tone	Huish Champflower-Chipstable	1	Marginal fail Biochemical Oxygen Demand²
Tone	Chipstable-Stawley	1	Significant fail Biochemical Oxygen Demand²
Tone	Stawley-Confluence with Westford Stream	2	Compliant
Tone	Confluence with Westford Stream-Wellington sewage treatment works	2	Compliant
Tone	Wellington sewage treatment works-Poole	2	Compliant
Tone	Poole-Confluence with Hele	2	Compliant
Tone	Conf with Hillfarrance/Hele-Confluence with Halse Water	2	Compliant
Tone	Confluence with Halse Water-Bridgwater & Taunton Canal	2	Compliant
Tone	Taunton & Bridgwater Canal-Confluence with Broughton Brook	3 [2]	Compliant
Tone	Conf with Broughton Brook-Ham	2	Compliant
Tone	Ham-Knapp	4 [3]	Significant fail Unionised Ammonia¹ (River Quality Objective and Long Term River Quality Objective)
Tone	Knapp-Haymoor (Tidal Tone)	3	Compliant
Broughton Brook	Source-Confluence with Tone	2 (1998)	Compliant
Taunton & Bridgwater Canal	Crossing with Tone-Crossing with Petherton Park Brook	2	Compliant
Taunton & Bridgwater Canal	Crossing with Petherton Park Brook-Bridgwater Dock	4 (1998)	Compliant
Sherford Stream	Pitminster-Confluence with Tone	2	Compliant
Halse Water	Source-Halse	2	Compliant
Halse Water	Halse-Ash Priors Tributary	2	Compliant

River name	Public Stretch Name	River Quality Objective [Long Term River Quality Objective]	Compliance (1998)
Halse Water	Conf with Ash Priors Tributary-Confluence with Back Stream	2	Compliant
Halse Water	Confluence with Back Stream-Confluence with Tone	2	Compliant
Halse Wtr Tributary	Source-Confluence with Halse Water	2	Compliant
Back Stream	Source-Confluence with Halse Water	2	Compliant
Hele Brook	Lowton-Confluence with Tone	2	Compliant
Hillfarrance Brook	Source-Preston Bowyer	2	Marginal fail Biochemical Oxygen Demand²
Hillfarrance Brook	Preston Bowyer-Confluence with Tone	2	Marginal fail Biochemical Oxygen Demand²
Westbrook Stream	Source-Confluence with Hillfarrance Brook	2	Marginal fail Biochemical Oxygen Demand¹
Haywards Water	Ford/Wellington Hill-Confluence with Tone	2	Compliant
Chelston Stream	Chelston-Confluence with Haywards Water	2	Compliant
Westford Stream	Beam Bridge-Confluence with Tone	2 (1998)	Compliant

¹: These stretches marginally failed to comply for the first time in 1998. As marginal non-compliance indicates that there is a 50% chance that a stretch has not complied with its River Quality Objective, there is equally a 50% chance that this stretch has complied with its River Quality Objective. Thus no action will be taken at present; we will continue our routine monitoring of these stretches and, if repeat failures occur, we will then investigate the possible causes of failure.

²: See section 2.1

³: See section 2.24

5.7 EC Freshwater Fish Directive

The Environment Agency has a specific duty to assess the state of, and safeguard, freshwater fisheries and the waters that they inhabit. In 1978 the European Community (EC) Freshwater Fish Directive was adopted (78/659/EEC) with the purpose of setting water quality objectives, for designated stretches of water, to enable fish to live continuously or breed in favourable conditions.

Two categories of water were identified: those suitable for salmonids (salmon and trout), and those suitable for cyprinid fish (carp, tench, barbel, rudd, and roach). Salmonid fish habitats are characterised by fast-flowing reaches of rivers which have a high oxygen content and a low level of nutrients, whereas cyprinid fish habitats are those of slower-flowing waters which have low dissolved oxygen levels and commonly pass through actively-managed agricultural land, which can cause high levels of nutrients. Various standards were set in relation to these categories, including values for dissolved oxygen, pH, non-ionised ammonia, total ammonium, total residual chlorine, zinc and, where thermal discharges occurred, temperature. We routinely monitor designated fisheries stretches and any non-compliance with the standards set out in the Directive is reported (see Issue 2.1).

5.8 Biological Quality

Every 5 years we monitor biological quality and classify river reaches using a scheme of 6 classes. The next survey will be in 2000.

Biological Class Descriptions

Biological Class	Description
a	Very good
b	Good
c	Fairly good
d	Fair
e	Poor
f	Bad

5.9 Contaminated and derelict land

The Environment Agency will from early 2000 have specific duties under the Environment Act 1995 with respect to contaminated land. **This is defined as any land which appears to a local authority to be in such a condition – because of the substances it contains – that water pollution or significant harm is being, or is likely to be, caused.** This interpretation is subject to guidance issued by the Secretary of State. We will have a duty to prepare and publish a report on the state of contaminated land after local authorities have informed us of the sites within their area, or if specifically requested to do so by the Secretary of State.

Local authorities are the key regulators under the Act, with the Agency acting as a consultee and advisor. The local authority will carry out a survey to identify contaminated land in its area, and will then, in collaboration with the polluters and/or landowners, ensure that works are carried out to remove the identified risks. Some sites will be designated as 'special sites' (i.e. contaminated sites such as nuclear power stations, explosive manufacturers, petroleum refineries and all Ministry of Defence land) in which case we will take responsibility. Special sites are contaminated sites which the Agency is already regulating through its statutory duties under other legislation.

Periodic surveys have, however, been made of derelict land. The two are not the same. **Derelict land is considered to be land, which has become so damaged by industrial or other developments that it is incapable of beneficial use without treatment.** Such land includes:

- close and disused waste tips;
- worked-out mineral excavations which are not subject to enforceable planning conditions or other arrangements providing for restoration;
- abandoned military or service installations;
- abandoned industrial installations;
- areas of land that are affected by actual surface collapse resulting from disused underground mining operations.

The contamination of land may cause damage to the soil and anything coming in contact with it - plants, wildlife, man or buildings. The contaminants can also spread by natural means to the air, surface water or groundwater and continue to cause harm in these environments. Failing to renovate and re-use such sites increases the pressure to develop unused sites, resulting in the loss of farmland and valuable habitats.

Most contaminated and derelict sites are improved through redevelopment, with the cost of the work paid for by the development. The details of the clean-up will be controlled through planning permission. This is the best means of achieving re-use of land, and will continue wherever possible. Some sites, which are larger or more heavily contaminated, require preliminary work (often known as pump priming) before developers can take over. This work may be done by national owners, such as British Gas or Railtrack, or by government-sponsored bodies such as the Development Agencies or English Partnerships.

We will contribute to the development planning process to ensure effective improvement of contaminated sites as and when they are proposed for development. We will work with national companies and other government bodies to ensure effective improvement of contaminated sites proposed for development.

5.10 Managing Waste

The Environment Agency regulates the treatment, recovery, storage, movement and disposal of controlled wastes. Controlled waste includes household, commercial and industrial wastes. It excludes waste from agricultural, mining and quarrying operations, waste water, explosives and radioactive wastes. However, some agricultural, quarry and mine waste may become controlled waste in the near future.

The government's strategy for sustainable waste management in England and Wales is set out in a White Paper 'Making Waste Work', published in December 1995. This sets out the waste hierarchy:

Reduction
Re-use
Recovery – recycling, composting, energy
Disposal

The overall objective is to move the management of waste up the hierarchy thus reducing the volume of waste that is finally disposed to landfill. Landfill, however, will remain as a method of solid waste disposal in the United Kingdom for wastes that cannot be recovered and for the residue of some recovery methods such as incineration with energy recovery.

Government initiatives to move waste management up the hierarchy include legislative as well as financial incentives. Mechanisms already in place include;

- the requirement on local authorities to draw up Waste Local Plans as well as Recycling Plans to detail how household recycling targets are to be met;
- the Landfill Tax which was introduced on 1st October 1996;
- the Producer Responsibility Obligations (Packaging Waste) Regulations which were introduced in March 1997 are the first in a set of regulations which place obligations on companies that handle specific types of goods. These goods such as packaging, electrical and electronic equipment, tyres and vehicles when no longer of use represent problematic waste streams or large waste streams that are primarily disposed of to landfill. The Packaging Waste Regulations, as they are known, place an obligation on companies to recover and recycle specific amounts of waste packaging, calculated from the amounts of packaging that they handle. Not only does this approach enforce increased recycling and recovery it encourages companies to reduce the amount of packaging they use. The less packaging companies handle, the less onerous and costly achieving their obligations become.

Since the publication of 'Making Waste Work' the Government has published a consultation paper on waste strategy for England and Wales entitled 'Less Waste More Value?' (1998). The paper builds upon the objectives of the previous paper and has the following national key commitments:

- substantial increases in recycling and energy recovery,
- engagement of the public in increased re-use and recycling of household waste,
- a long-term framework with challenging targets underpinned by realistic programmes,
- a strong emphasis on waste minimisation,

- using the waste hierarchy as a guide, not a prescriptive set of rules,
- creative use of economic incentives like the landfill tax,
- increased public involvement in decision-making.

The consultation paper highlights the lack of reliable information on size and composition of various waste streams. It emphasises the need to increase our understanding of types and quantities of waste we produce in England and Wales. One of the Environment Agency's main objectives was to provide information and guidance on the national waste strategy. As a result, the Environment Agency has recently completed the first-ever National Waste Production Survey that will provide estimates of controlled waste arisings from industry and commerce. Previous estimates have placed this waste stream at 122 million tonnes. Final figures will be available in the autumn of 1999 after which the Government will publish its waste strategy for England and Wales. (See Issue 2.19)

The Landfill Tax is enforced by Her Majesty's Customs and Excise. There are two levels of tax, £2 per tonne for inactive (inert) wastes and £10 per tonne for all other wastes disposed of at landfill sites. Landfill Tax is levied on the landfill site operations and before VAT is calculated. Site operators can contribute to enrolled Environmental Bodies for specific environmental projects. In return they can claim a tax credit worth 90% of any contribution to a maximum credit of 20% of their landfill tax liability.

We aim to encourage people to reduce their wastes and, for the wastes that are produced, to promote re-use and recycling.

5.11 Regulating Major Industry

One of the Agency's key responsibilities is **Integrated Pollution Control (IPC)**. This process aims to prevent pollutants from major industrial processes being released to the air, water and land. Where releases do occur, we try to make sure they are minimised and made harmless. Regulations made under Part 1 of the 1990 Environment Protection Act identify industrial processes that use or produce potentially harmful substances in significant amounts – known as prescribed processes and substances. Broadly, these are the industrial processes with the greatest potential to cause pollution. The United Kingdom was one of the first countries in Europe to introduce such an integrated regulatory system, and many individual processes have now been authorised. A similar approach will be introduced throughout the European Union under the new Integrated Pollution Prevention and Control Directive (IPPC), which is expected to be United Kingdom law by 2000.

The Integrated Pollution Control approach to pollution control considers releases to all three media (air, water and land) from industrial processes in the context of their effect on the environment as a whole. The option minimising impact on the environment as a whole is known as the best practicable environmental option. Guidance on how to conduct such an appraisal is provided in the Agency's free publication *'Best Practicable Environmental Option Assessments for IPC: A Summary'*.

In addition, processes have to use the best available techniques not entailing excessive cost (BATNEEC) to prevent or minimise releases of prescribed substances into the environment and render all substances harmless.

Before Integrated Pollution Control was introduced, releases of prescribed substances to the different environmental media (air, water and land) were dealt with under distinct sets of rules, enforced by separate regulators. This meant that industries barred from releasing hazardous pollutants into one environmental medium (such as to water in the nearest river) might be able to divert them into another medium where perhaps less stringent rules applied (such as to air by burning or to land by burying them). There was no means of ensuring that industry acted in the way that caused least harm to the environment as a whole.

For prescribed processes, control of releases to air, water and land have now been brought under a single regulatory scheme - Integrated Pollution Control – so the effects of these processes on the environment as a whole are properly considered. The system makes the effectiveness of Integrated Pollution Control doubly sure by targeting entire industrial processes or sectors – not just listed substances – for systematic regulation.

Where an Integrated Pollution Control authorisation does not cover the whole of a site, operators may also be subject to separate regulatory permits for aspects of Waste and Water Quality. However, the amalgamation within the Agency of the responsibility for regulations governing those aspects as well as Integrated Pollution Control has been a further significant step in ensuring a consistent approach to environmental management.

Some major industry is not covered by Integrated Pollution Control and local examples include the dairy/food industry, although some larger intensive farming activities are likely to become subject to regulation by the Agency under Integrated Pollution Prevention Control. We regulate their discharges to water by issuing consents which restrict the type and amount of pollutants that can enter a watercourse.

5.12 Radioactive substances regulation

The Environment Agency is the enforcement authority for England and Wales of the **Radioactive Substances Act 1993**. This statute is concerned with the keeping, use and disposal of radioactive substances and, in particular, the regulation of radioactive waste disposal.

There are three types of registration and one authorisation under the Radioactive Substances Act 1993:

- Open Radioactive Source – is radioactive material in a form that may be divided (for example, diluted). They include radioactive powders, gases, solutions or solids. There is potential for contamination of other materials.
- Closed Radioactive Source - is firmly incorporated, or sealed, in solid, inert, non-radioactive material, which prevents the dispersion of any radioactive material. Closed sources include foil or electro-deposited materials. They normally consist of one or more radionuclides.
- Mobile Radioactive Apparatus - is apparatus, equipment, appliance or other radioactive material which is either constructed or adapted for being transported from place to place and used for testing, measuring or otherwise investigating any of the characteristics of a substance or article or used for releasing radioactive material into the environment or introducing it into organisms.
- 'Accumulate and dispose authorisation' – permits the accumulation and disposal of radioactive waste materials.

Within the Tone area there are three open or closed sources and one 'accumulate and dispose' site which are listed below.

Sites authorised as closed sources

All three certificates are held by Somerset Scientific Services for Somerset County Council.

Sites authorised to accumulate and dispose of radioactive waste

Taunton and Somerset National Health Service Trust, Musgrove Park Hospital, Taunton TA1 5DA

5.13

Area Environment Group

Name	Representing
Mr L R Fortune	Chairman, appointed by the Agency
Mr M J Stoodley	Regional Committee Member
Mr J Comer	Regional Committee Member
Mr R W Wyatt	Water Resources
Mr S Hemmings	Waste Management
Mr M Hellings	Waste Management
Mr D Fish	Industry
Mr M W Minshal	Industry
Councillor N Jones OBE	Tourism
Ms JC Brookhouse	Conservation
Mrs A M Lennox	Recreation
Mr J L R Williams	Fisheries
Mr J B H Watkis	Flood Defence
Mrs L Bennett	Local Authority
Mr H P N Temperley	Local Authority
Mr C S W C Newbury	Local Authority
Professor G P Hammond	Education
Mr W H Warmington	Agriculture
Dr C D Holman	Regional Committee Member
Ms J Smith	Bristol City Council

5.14

Steering Group

Name	Representing
Mr L Fortune	Area Environment Group Chairman
Mr J Comer	Farmer/Area Environment Group Member/Flood Defence Committee
Mrs A Lennox	Ramblers Association/Area Environment Group Member
Mr M Venning	Wessex Water
Mr J Williams	Conservation
Mr R Martin	Somerset Trust Nature Conservation
Mr D House	Farmer
Mr E G Kidner	Wiveliscombe Parish Council
Mr P Stone	Somerset County Council
Mr J Clark	Taunton Deane Borough Council
Mr F Ulf-Hansen	English Nature
Mr A Tucker	Industry
Mr R Dommett	British Waterways
Mr J Pring	Wyvern Waste
Mr A Ker	Farming and Wildlife Advisory Group
Miss J Lavick	Taunton Deane Borough Council

5.15 Units

cm	centimetre
ha	hectare
km	kilometre
km ²	square kilometre
KeqH ⁺ per ha	kilogram equivalents of hydrogen ions per hectare
kWh/m ²	kilowatt hours per square metre
l/s	litres per second
m	metre
m ³ /d	cubic metres per day
m ³ /s	cubic metres per second (cumecs)
mg/l	milligrams per litre
mg/m ²	milligrams per square metre
ml	millilitre
ML/d	megalitres per day
ML/y	megalitres per year
mpg	miles per gallon
ppb	parts per billion
ppm	parts per million
te	metric tonne
µg/l	micrograms per litre
µg/m ³	microgram per cubic metre

5.16 Useful Publications

A Guide to Information Available to the Public, Environment Agency

'Air Quality A to Z' June (1995) Meteorological Office and Air Quality Division, Department of the Environment (DoE)
ISBN 0861803175

Somerset County Council Structure Plan

Taunton Deane Local Plan

British Geological Survey 1994

Cordrey L (ed) (1997) Action for Biodiversity in the South-West – a series of habitat and species plans to guide delivery,
ISBN 0903138972

Cordrey L (ed) (1996) The Biodiversity of the South-West – an audit of the South-West biological resource, ISBN
0903138920

EC Surface Water Abstraction Directive (75/440/EEC)

EC Directive on Pollution caused by the discharge of certain dangerous substances into the aquatic environment
(76/464/EEC)

EC Directive on Freshwater Fish (78/659/EEC)

EC Directive on the Conservation of Wild Birds (79/409/EEC)

EC Directive on the Protection of Groundwater against Pollution Caused by Certain Dangerous Substances (80/68/EEC)

EC Directive on Air Quality Standards for Nitrogen Dioxide (85/203/EEC)

EC Directive Concerning Urban Waste Water Treatment (91/271/EEC)

EC Directive concerning the protection of waters against pollution caused by nitrates from agricultural sources
(91/676/EEC)

EC Directive on Species and Habitats (92/43/EEC)

Environment Agency (1997) An Environmental Strategy for the Millennium and Beyond, HO-9-97-100K-D-BABF

Environment Agency (1998) 1997 – 1998 annual review HO-8/98-16k-D-BCPX

Environment Agency (1998) 1999/2000 corporate plan summary HO-8/98-16k-D-BCQI

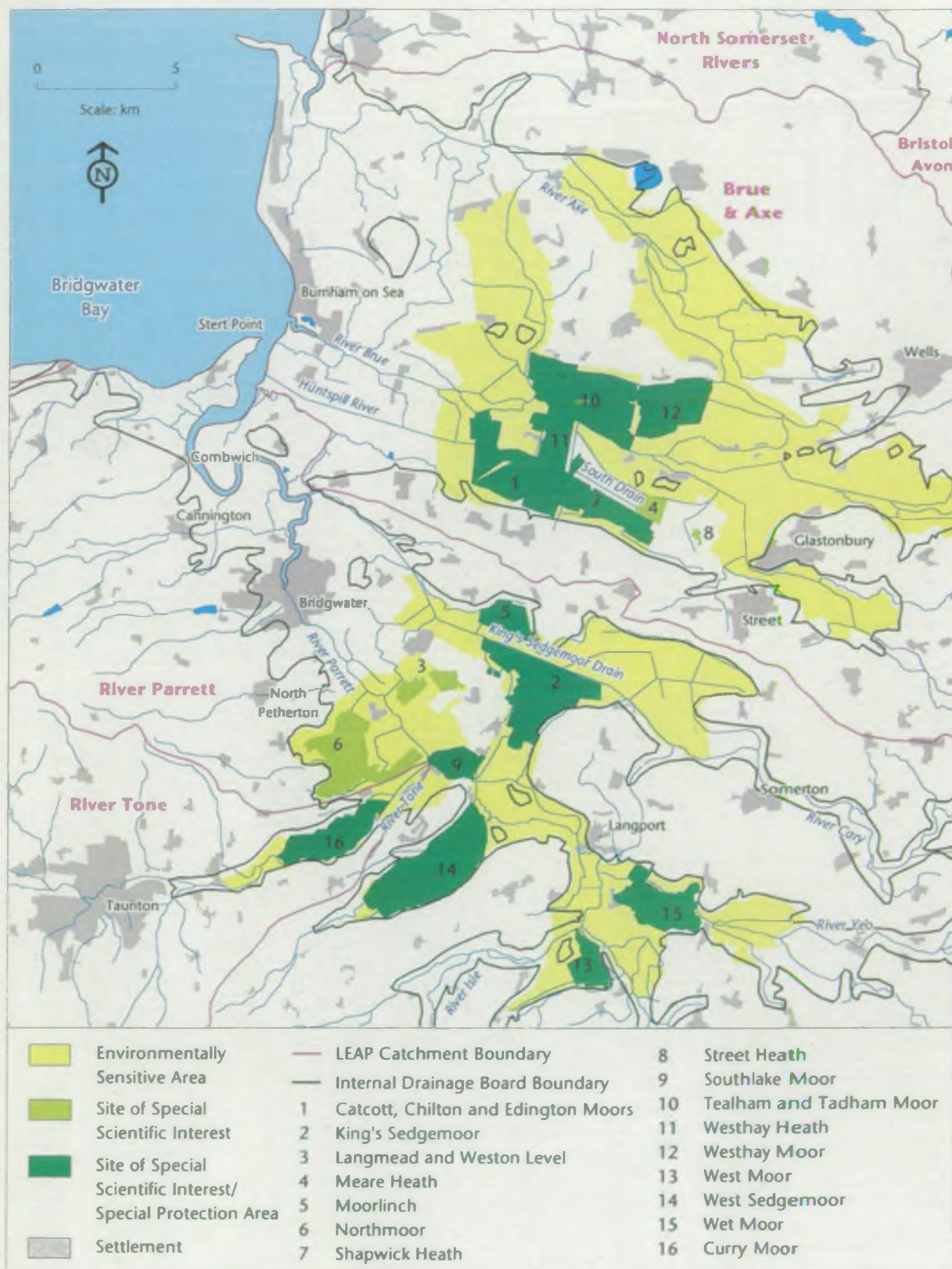
Environment Agency (1998) Annual Environmental Report for the Agency's Own Activities 1997/98 – Summary HO-
8/98-10k-C-BDGX

- Environment Agency (1998) A Price Worth Paying. The Environment Agency's proposals for the National Environment programme for water companies 2000 – 2005, a submission to government, May HO-5/98-2k-C-BCKZ
- Environment Agency (1998) Aquatic Eutrophication in England and Wales – a proposed management strategy – Consultative Report –HO-10/98-2k-CBDWR
- Environment Agency (1998) Corporate Plan 1999 – 2000, Our Forward Look to 2002 HO-8/98-3k-A-BCQG
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- Environment Agency (1997) Integrated Pollution Control: An Introductory Guide HO-12/97-10k-C-AZWT
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Other information is available from our website at <http://www.environment-agency.gov.uk> including an up-to-date national 'State of the Environment Report'. We have also produced leaflets on many topics related to our work, some of which are referred to in this plan. If you wish to know whether or not we have a leaflet on a particular topic, or require one of these listed publications please phone or write to the Customer Contact team at our Bridgwater office (see cover for details).

Map 4 - Somerset Levels and Moors and LEAP Catchments



MANAGEMENT AND CONTACTS:

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

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

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

ENVIRONMENT AGENCY GENERAL ENQUIRY LINE

0645 333 111

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

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