



SECOND ANNUAL REVIEW
OF THE
UPPER BRISTOL AVON
CATCHMENT MANAGEMENT PLAN
(1997)



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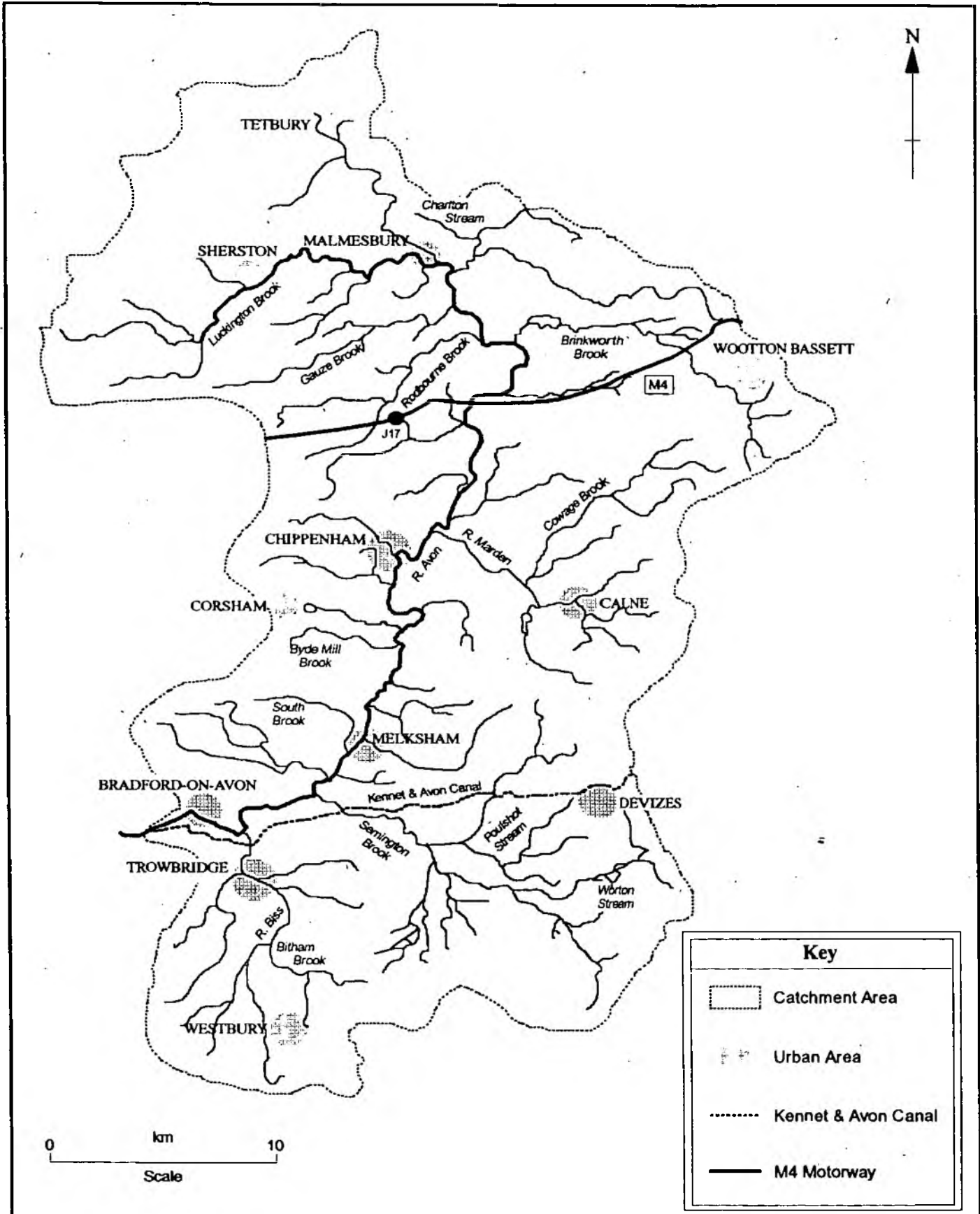
**UPPER BRISTOL AVON CATCHMENT MANAGEMENT PLAN
SECOND ANNUAL REVIEW: APRIL 1996 TO MARCH 1997
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Upper Bristol Avon Catchment



1. INTRODUCTION

This is the Second Annual Review of the Upper Bristol Avon Action Plan which was published in March 1995. It introduces the Environment Agency, summarizes progress made with Actions and introduces several new Actions. Information relating to this catchment may be found in the:

- Upper Bristol Avon Catchment Management Plan Consultation Report - June 1994,
- Upper Bristol Avon Catchment Management Plan Action Plan - March 1995
- Upper Bristol Avon Catchment Management Plan First Annual Review - June 1996

1.1 The Environment Agency

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

Our Vision is :

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

We will :

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

Our Aims are :

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

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

1.2 The Environment Agency and Catchment Management Planning

Catchment Management Plans (CMPs) produced by the NRA will continue to be called CMPs, and subsequent reviews will focus mainly on water related issues. Section 5 gives a brief overview of our responsibilities relating to Integrated Pollution Control (IPC), Radioactive Substances (RAS) waste

management and air quality. Any actions previously attributed to the NRA have now been taken over by the Environment Agency. New plans published after 1 April 1996 will be known as Local Environment Agency Plans (LEAPs) and these will take account of all our responsibilities. All CMPs will be replaced by LEAPs by December 1999.

2. PURPOSE OF THE ANNUAL REVIEW

An important part of the CMP process is to monitor the Action Plan to ensure that targets and actions are achieved and that the plan continues to address relevant and significant issues within the catchment. This report summarizes the progress made since the publication of the Action Plan in 1995 and the First Annual Review in 1996.

3. SUMMARY OF PROGRESS

3.1 Flood Defence

Since 1 September 1996 we have taken over the lead role from the Police in passing flood warnings to people who are at risk, so that they can take action to protect themselves and their properties. Where there is a known risk that flooding could occur from the main rivers flood warnings will be issued for the area affected.

A leaflet, *Flood Warning for the Upper Bristol Avon catchment* is now available from our offices. The stretches and locations of river for which flood warnings will be issued are listed, along with the types of warnings issued.

These warnings are issued to the Police, local authorities, and directly to those at risk via a recorded telephone message. Flood warnings will also be broadcast by most local radio stations, and information on the general situation will be available on Teletext. Additionally our Floodcall telephone service (0645 88 11 88) provides regular updated information on flood warnings in force across England and Wales.

Flood warning is not an exact science. We use the best information available to predict the possibility of flooding, but no warning system can cover every eventuality. It is the responsibility of those who live in flood prone areas to be aware of any risk and to know what action they should take to protect themselves if flooding occurs. Warnings are issued for flooding from most major rivers. There are other types of flooding for which a warning service cannot be provided, for example road flooding caused by blocked drains or groundwater.

Over the next five years we will be improving the warning service so that more information reaches those who need it.

Vital refurbishment work on major flood defence structures has been progressed. Sluice gates at Melksham, Chippenham, Seagry, Christian Malford and Trowbridge have all been given a further 20 years life through this work.

3.2 Development

The Agency is represented on various officer groups and working parties of the Regional Planning Conference which is formulating the advice to be given by Conference to Government for a revision to the Regional Planning Guidance for the South West Region.

The Agency has been involved with the Structure Plan for Wiltshire and recently participated in the Examination in Public of the Plan. The Agency made representations on the Local Plans for North and West Wiltshire. Through liaison with the planning departments, and representation at Plan Enquiries, the Agency is ensuring that the Plans take account of their interests.

Section 105 plans showing indicative flood risk areas are targeted for completion by the end of June, to be formally handed over to local authorities during July/August.

3.3 Recreation

Congratulations to the Kennet & Avon Canal Partnership which was successful with its application for funds to the Heritage Lottery Fund. The Partnership has been awarded £25m, which will fund a major programme of works on the Kennet & Avon Canal over the next 5 years. These works will include lock gate replacements, repairs and improvements to water control structures - sluices and weirs; canal lining works to reduce leakage; embankment repairs and landscaping improvements. The Canal's back pumping arrangements are in place at Seend, Semington, Bradford-on-Avon and Devizes. Outstanding work remains at Wootton Rivers and at Bath. This work will be funded from the Lottery allocation.

On the Wilts and Berks Canal, the contract for a £62k restoration feasibility study has been let by North Wiltshire District Council acting on behalf of the newly established Wilts and Berks Canal Trust. The Environment Agency was represented on the Tender Assessment Board for this work by Dr. Andrew Brookes from the Agency's Thames Region. The Agency (Thames Region) has contributed £10k towards this study. Included in the study will be a review of the water requirements, availability of water, and the environmental impacts of restoration.

A Project Group has been set up to oversee the work of the consultants. This Group will meet monthly for the duration of the study (April-Sept 1997). A representative from Thames Region (West Area) has been invited to join the Group to ensure that the Agency's interests are properly covered.

3.4 Fisheries

As part of the Agency's monitoring programme the Upper Bristol Avon and its tributaries are surveyed for their fish populations currently within a 3-5 year rolling programme. No surveys in this area were carried out during 1996 but surveys are planned on the Rivers Marden and Biss during 1997. The trout habitat mapping exercise on the Sherston Avon in 1995 was repeated on the Tetbury branch during 1996 to quantify the range of suitable trout habitat present.

As part of the low flow investigations on the Upper Avon an angling quality study is being undertaken by contractors to relate fly fishing conditions to varying river flows. By concentrating the study on trout fly fishing conditions the flow needs of the coarse fish which are present will be adequately covered in the study. The investigation is being developed and will continue through 1997.

Some habitat improvement work has been carried out on the Upper Avon below Malmesbury in the form of flow deflectors, pool creation and strategic fencing to exclude cattle. This work has been funded by Wessex Water and is planned to continue in 1997. The Agency has done similar work on a length of the Upper River Marden, with the creation of stone riffles, channel narrowing and fencing to exclude cattle. This section had been identified from earlier survey work to have low trout recruitment due to poor habitat. Contributory factors were a lack of spawning and juvenile habitat, excessive siltation exacerbated by over-wide sections and an inappropriate artificial weir.

3.5 Water Quality

The Upper Bristol Avon was one of eight river catchments in England and Wales selected by Government in which to trial the use of Statutory Water Quality Objectives (SWQOs). In 1996 a report on proposals for SWQOs was prepared for public consultation by the Agency. The report's proposals were then revised, taking account of the responses, and submitted to the Secretary of State for the Environment in November 1996, who will consider how and when to proceed with the formal setting of SWQOs.

We monitor 282.2 km of rivers in the Upper Bristol Avon catchment. In 1995, 40.3% of monitored river lengths in the catchment were of good or very good chemical quality, 32.8% were fairly good while 26.9% were either fair or poor. In biological terms 71.2% of the monitored river lengths were of good or very good quality, 25.3% were fairly good while the remaining 3.5% were of poor quality.

Between 1990 and 1995 there was an overall improvement in chemical quality over 0.7% of the monitored network while biological quality improved by 20.8%. Although water quality has recently improved there are parts of the catchment where it is not good enough. These shortfalls in quality are described in this report.

The 1996 routine water quality monitoring data has identified stretches of watercourse which failed to meet the standards required for the proposed SWQO. These stretches are listed in the Action Table Section 6, we will continue to investigate the causes for these failures in water quality and implement plans to secure compliance.

3.6 Conservation

We have continued to work with local authorities on river restoration projects for the River Avon in Chippenham, Malmesbury, Melksham and Calne. These formed part of Millennium Commission bids which failed, but which are to be progressed as collaborative projects.

Our biodiversity conservation work continues to revolve around enhancement opportunities related to developments and local initiatives, and to input to Regional and Local Habitat and Species Action Plans.

We are preparing a document to highlight those issues which we feel are crucial to sustainable development within the catchment.

3.7 Malmesbury Low Flow Studies

Last summer, as a trial, Wessex Water, with the agreement of the Environment Agency, added extra water to the Tetbury and Sherston Avon. Groundwater from stream support boreholes at Tetbury, Luckington and Stanbridge was being used to maintain river flows in Malmesbury.

We have been successful in maintaining target flows for most of the trial. This year we intend to: repeat the initiatives, finish the angling survey and undertake computer modelling of the catchment to examine the sustainability and benefits of the low flow alleviation options currently being trialed in the field.

The 1997 trial is expected to start in June and will continue until groundwater levels rise naturally in the autumn.

4. ACTION PLAN MONITORING REPORT

The Action Plan is the means by which the vision of the catchment is turned into reality, and outlines detailed proposals for resolving the Issues identified. The following tables update the progress with each Issue identified in the Upper Bristol Avon Action Plan for the period 1 April 1996 to 31 March 1997.

Issues and Actions	By	Cost	95	96	97	98	99	Progress Year One	Progress Year Two
1 Development Pressure in the Catchment									
1.1 Complete catchment drainage model	Agency	£25k	Nil	£25k				Completion of catchment drainage model delayed by budget restrictions. Target completion 1996 if budget available	Action completed, no further reporting in future plans
1.2 Ensure relevant policies are contained in development plans	Agency LAs	£10k p.a.	£10k	£10k				Continuing liaison with district councils. Policies included in West Wiltshire District Wide Plan upheld at inquiry Negotiations continuing with North Wiltshire District Council to improve policies in the draft District Wide Local Plan which will protect against potential flood risk arising from new development and safeguard the water environment	Information has been provided for the Wiltshire County Structure Plan Enquiry in Public; policy statements have been provided for the North Wiltshire District Council Local Plan; responses have been provided to the Joint Consultation Document for the old Avon area (North Somerset; Bath and North East Somerset; Bristol City Council and South Gloucestershire Council - Structure Plan)
1.3 Produce programme for S105 surveys of flood risk areas	Agency	Nil	Nil	Nil				S105 indicative plans being produced for 1996	S105 indicative plans to be completed by the end of June, and with LAs programme of Stage 2 Hydraulic Models agreed.
2 Eutrophication									
2.1 Nutrient enrichment studies - collect chemical and biological data for the Upper Bristol Avon	Agency	£32k p.a.	£32k	£32k				Biological and chemical surveys conducted throughout summer of 1995. Work, in line with national protocols, conducted on algal populations, macrophyte assemblages, macroinvertebrate communities and diurnal dissolved oxygen variation. In all, nine treated sewage discharges to receiving waters were assessed. Evidence has been found of eutrophication both upstream and downstream of these discharges and there is some evidence that the situation is exacerbated downstream of the inputs. A report of the findings of the 1995 field work has been produced. This will also be used to guide the scope of the 1996 survey	The proposal for Sensitive Area (Eutrophic) Status has been submitted to Head Office for consideration and will be submitted to the DoE in June 1997. Action completed, no further reporting in future plans
2.2 Assess relative contribution of inputs from all sources	Agency WWSL MAFF Farmers				*	*	*	See 2.1 above	See 2.1 above

Issues and Actions	By	Cost	95	96	97	98	99	Progress Year One	Progress Year Two
2.3 To develop a National Strategy for the control of eutrophication	Agency							Document will be available by the end of August 1996	Document is still in draft format and is due to be submitted to DoE prior to wider consultation later in 1997
3 Farm Discharges - Identify farms causing pollution and ensure steps are taken to eliminate the polluting discharges									
3.1 Gauze Brook	Agency Farmers	£2.4k	£2.4k	£0.2k				Farms were identified during 1995 and all 17 active farms were visited in Feb/Mar 1996	The survey identified one site where major improvements were required. These have recently been completed. <i>Action completed, no further reporting in future plans</i>
3.2 Upper Brinkworth Brook	Agency Farmers	£0.8k	£0.8k	£1.8k				Negotiations have taken place at a few sites and improvements have been achieved. Further sites will be visited in 1996	Twenty-four farms identified and visited for risk assessment. Major works completed at one site and planned at another
3.3 River Marden	Agency Farmers	£8k p.a.	£8k	£2.9k				In 1995, 29 farms were identified and visits are planned to continue during 1996	So far 60 active farms have been identified of which 46 have been first time visits. Seven farms have had a follow up visit
3.4 Semington Brook	Agency Farmers	£5.2k p.a.	£5.2k	£2.7k				During 1995, 25 farms were visited. Ten farms received follow up visits to pursue improvements	Approximately 40 farms have now been visited, follow up visits have been carried out where necessary and improvements have been secured at 8 sites
3.5 Chalfield Brook	Agency Farmers	£3.2k	£3.2k	Nil				All 19 active farms were visited during 1995 and eight have received follow up visits to pursue improvements	We are still awaiting improvements at 3 sites
3.6 Woodbridge Brook/Charlton Stream	Agency Farmers	£4k p.a.		£0.7k	•			Main campaign planned for 1996 but additional sampling points requested in 1995 to gather helpful data. Some improvements being negotiated	Forty seven active farms have been identified. Nine farms have had initial visits. Due to the larger than expected number of farms identified the time-scale for this campaign has been extended
3.7 Continue to investigate sources of pesticide inputs to river	Agency Pesticide users	U	Nil	Nil	•	•	•	No specific action to date	No specific action taken
4 Water quality downstream of sewage treatment works (STWs) - Issue more stringent consent limits to bring about improvements in downstream water quality; carry out appropriate improvement works to bring about compliance with new consents at the following STWs:									
4.1 Trowbridge	Agency WWSL	£1.4k per consent	As cost	As cost				Relocation of outfall to the main River Avon is under construction. Discussions in progress with Wessex Water Services Ltd (WWSL) over requirements for improved treatment	Monitoring of impact on River Avon is being undertaken prior to determining the need for extra investment
4.2 Wootton Bassett	Agency WWSL	£1.4k per consent	As cost	As cost				WWSL have completed survey of existing treatment facilities which has identified requirement for further treatment. Options for further treatment are in preparation	Construction of improvements is still in progress

Issues and Actions	By	Cost	95	96	97	98	99	Progress Year One	Progress Year Two
4.3 Devides	Agency WWSL	£1.4k per consent	As cost	As cost				We are assessing our requirements for improvements. Assessments will be complete by the end of August 1996	Required improvements to the STW have been agreed with WWSL. WWSL are in the design stage
4.4 Melksham	Agency WWSL	£1.4k per consent	As cost	As cost				As 4.3 above	Phase 1 of the improvements to the STW will be the relocation of the outfall from the South Brook to the River Avon. Phase 2 will be improved secondary treatment and improvements to storm sewer overflows. If monitoring shows that completion of Phase 1 has resulted in the achievement of the proposed SWQO then Phase 2 may not need to be implemented
4.5 Bowerhill	Agency WWSL	£1.4k per consent	As cost	As cost				This works has already been upgraded to allow the receiving water to meet its proposed WQO. WWSL have applied for a new consent to take into account planned development in the area	Bowerhill STW has been improved under AMP1 and a new consent has been issued. Monitoring will be undertaken to determine whether further improvement is necessary
Issue more stringent consent limits to ensure downstream water quality is maintained at 1990 levels; carry out appropriate improvement works to bring about compliance with new consents at the following STWs:									
4.6 Tetbury	Agency WWSL	£1.4k per consent	As cost	As cost				No progress. Consent review will be considered by EA following publication of 1995 water quality survey results	A review of 1995/96 water quality data is underway
4.7 Compton Bassett	Agency WWSL	£1.4k per consent	As cost	As cost				As 4.6 above	As 4.6 above
4.8 Determine appeal for Thingley STW	Agency WWSL	£1.4k per consent	As cost	As cost				No resolution of appeal by DoE. This has been highlighted as an issue in the SWQO proposal document	DoE has not resolved the appeal
4.9 NEW Chippenham Blackwall Hams STW (River Avon: Blackwall Hams - Confluence with Bydemill Brook)	Agency WWSL								A consent review will be undertaken to reflect investment made by WWSL, together with some minor additional investment. The proposed SWQO for the stretch is RE3 (1996). More water quality data, to be collected through the routine monitoring programme, is required to determine whether further investment is needed at Chippenham Blackwall Hams STW to meet the proposed long term SWQO of RE2

Issues and Actions	By	Cost	95	96	97	98	99	Progress Year One	Progress Year Two
4.10 NEW - Westbury STW (Bitham Brook: Heywood House - Confluence with Biss)									This stretch receives effluent from Westbury STW. Some of the effluent from this STW is used as process water at a cement works. The cause of poor water quality in this stretch is not fully understood. However, preliminary investigation work has indicated that improved treatment may be required at Westbury STW to achieve compliance with the proposed long term SWQO of RE4
4.11 NEW - Lavington STW (Semington Brook: Upstream of Woodbridge Farm - Confluence with Worton Stream)									Improvements to this STW are required to allow this stretch to achieve its proposed long term SWQO of RE2
4.12 NEW - Urchfont STW (Worton Stream: Urchfont - Confluence with Semington Brook)									Improvements to this STW are required to allow this stretch to achieve its proposed long term SWQO of RE2
5 Unsewered areas and sewerage infrastructure									
5.1 Environment Agency to encourage local communities, district councils, water companies and OFWAT to seek solutions	Agency Individuals LAs OFWAT WWSL	£8.2k p.a.	£8.2k	£8.2k	•	•	•	NRA carried out a survey at South Wraxall in order to establish extent of problem. A decline in water quality was confirmed downstream of the lower part of the village where it was shown by dye testing that at least three septic tanks cause poor water quality in the watercourse. New legislation, contained in the Environment Act 1995 gives specific powers to the Environment Agency and responsibility to water companies with respect to unsewered areas and the implications of this legislation are currently being explored	The legislation contained in the Environment Act 1995 puts the Environment Agency in the role of arbiter rather than promoter of first time schemes. South West Region and Wessex Water have had discussion with regard to priorities of various schemes. North Wessex Area considers South Wraxall, Bushton and Beanacre to be high priority. Bushton residents have requested a scheme. Treatment options and costs for Bushton are currently being appraised by Wessex Water. The Agency has been consulted with regard to these options and the standards which it would apply to any discharge
5.2 Environment Agency and WWSL to continue to discuss improvements to the operating performance of unsatisfactory sewer storm overflows which have been identified in drainage area plans	Agency WWSL	£2.7k p.a.	£2.7k	£2.7k	•	•	•	Negotiations continue on a regular basis. Improvements are scheduled for Chippenham, Melksham, Wootton Bassett and Devizes. Drainage Area Plans for Calne and Bradford-on-Avon have been completed	Improvements have been completed at Chippenham, Devizes and Bradford-on-Avon. Discussions are presently ongoing regarding the detailed engineering designs for improvements at Melksham, Wootton Bassett and Calne

Issues and Actions	By	Cost	95	96	97	98	99	Progress Year One	Progress Year Two
5.3 Environment Agency to issue appropriate consents for new sewerage system in Malmesbury	Agency	£400	£400					Improvements to sewerage system now complete. Attenuation of storm overflows has been provided to reduce the frequency and duration of the operation of storm overflows in the town. Discharge consents have been issued for those combined sewer overflows (CSO) which have been retained	Action completed no further reporting in future plans required
6 Site specific water quality issues									
6.1 Low dissolved oxygen in the headwaters of the Tetbury and Sherston Avon: Environment Agency to carry out investigations	Agency	£2.5k	£2.5k	•	•	•	•	Investigations conducted in late summer/autumn of 1995 looked at Tetbury Avon, Sherston Avon and Gauze Brook. A Report, produced in December 1995 by North Wessex Investigations team, found that discharge of groundwater as stream support had significant effects on all four sites investigated. The results showed that the stream support water increased levels of dissolved oxygen present. No plans for any further work	Since undertaking these investigations, both the Tetbury and Sherston Avons have complied with the dissolved oxygen standards of the Water Quality Objectives set for them. We will continue to monitor the quality of these stretches of the rivers as part of our routine work and take action should significant failures of the quality standards occur Action completed no further reporting in future plans required
6.2 West Wiltshire Trading Estate, Westbury: Environment Agency to identify discharges from the Trading Estate and take action to control and improve effluent quality where necessary	Agency	£8.7k p.a.	£8.7k	£8.7k				Negotiations to secure further improvements have continued during 1995, both with the estate owners and directly with individual site operators/occupiers	We continue to work with the estate management and individual traders to improve pollution prevention. All tenants have been circulated with pollution prevention information. Certain high risk sites are receiving regular visits
6.3 River Marden: Environment Agency to undertake investigation to identify and control surface water inputs	Agency	£1.3k	£1.3k	•				A chemical sampling survey has been carried out on the River Marden through Calne and biological monitoring is planned. The results of these surveys are not yet available but already the work confirms that surface water from the Portemarth Trading Estate is problematic. All sites on this trading estate were visited during 1995 and pollution prevention advice given. A warning letter was sent to one site found to be causing pollutions	The survey of surface water inputs into the River Marden confirmed that the culvert which carries surface water from the Portemarth Trading Estate was contributing to the downgrading of the River Marden. Eight sites on the Trading Estate have received pollution prevention re-visits. Work has been requested at 3 sites. Wessex Water have investigated the source of a small foul discharge at The Wharf, Calne and have implemented a scheme to abate this

Issues and Actions	By	Cost	95	96	97	98	99	Progress Year One	Progress Year Two
6.4 Bitham Brook: Environment Agency to investigate reason(s) for non-compliance with its WQO	Agency	£1.6k p.a.	£1.6k	£1.6k				A chemical sampling survey was initiated in 1995 and continued into early 1996. A Report was produced in March 1996	The Report concluded that there was a decline in quality downstream of Westbury STW. It recommended further work and negotiations with Wessex Water concerning revision of their consent to discharge are under way
6.5/6 Discharges from RAF Lyneham: Continue to negotiate with the RAF and its agents to upgrade the STW and to further improve facilities and practices for the containment and treatment of surface water pollutants	Agency RAF	£1.7k p.a.	£1.7k	£1.7k				Discharge consents were issued for the STWs in early April 1996. A site survey was completed and a Report published in May 1996 to confirm details of the surface water drainage system. Improvements to STW still sought. Until appropriate improvements are in place the Environment Agency will object to further development proposals which would increase effluent load on the STW	A meeting is to be arranged to discuss progress with the upgrade to the STW. The consent which was issued in April 1996 will be reviewed to specify the discharge standard required to enable the receiving stream, the Strings Watercourse, to meet its objectives. The new standards will be applied in autumn 1998
NEW - Significant non-compliance with SWQOs in the following stretches:									
6.7 Avon - Confluence with Sutton Benger Brook - Malford								We will continue to investigate the cause for the failure and implement plans to secure compliance	
6.8 Avon - Confluence with Forest Brook - Confluence with Scotland Road								As above	
6.9 Avon - Confluence with Semington Brook - Confluence with Biss								As above	
6.10 South Brook - Atworth - Confluence with Avon								As above	
6.11 Cowage Brook - Confluence with Strings Watercourse - Bremhill House								As above	
6.12 Strings Watercourse - Freegrove Farm - Confluence with Cowage Brook								As above	
6.13 Hancocks Water - Source - Confluence with Brink Brook								As above	
6.14 Gauze Brook - Hullavington - Confluence with Avon								As above	
NEW - Marginal non-compliance with SWQOs in the following stretches:									
6.15 Bydemill Brook - Bydemill - Confluence with Avon								As above	
6.16 Cowage Brook - Bremhill House - Confluence with Marden								As above	
6.17 Strings Watercourse - Lyneham - Freegrove Farm								As above	
6.18 Honeyball Watercourse - Downstream Hills of Swindon - Confluence with Rivers Brook								As above	
6.19 Brinkworth Brook - Upstream Wootton Fields Farm - Confluence with Hancocks Water								As above	
6.20 Brinkworth Brook - Brinkworth - Confluence with Avon								As above	
6.21 Rodbourne Brook - Stanton St Quintin - Confluence with Avon								As above	
6.22 Sherston Avon - Crowdown Springs - Confluence with Luckington Brook								As above	
6.23 Luckington Brook - Luckington - Luckington Court								As above	
NEW - Non-compliance with long term RQOs in the following stretches:									
6.24 Worton Stream - Urchfont - Cadley Farm								As above	
6.25 Cowage Brook - Confluence with Strings Watercourse - Bremhill House								As above	
6.26 Strings Watercourse - Lyneham - Confluence with Cowage Brook								As above	
6.27 Brinkworth Brook - Brinkworth - Confluence with Avon								As above	

Issues and Actions		By	Cost	95	96	97	98	99	Progress Year One	Progress Year Two
6.28	Kennet and Avon Canal - Devizes - Confluence with Avon (Bath)								As above	
6.29	Cowage Brook - Bremhill House - Confluence with Marden								As above	
6.30	Rivers Brook - Downstream Hayles Farm - Confluence with Marden								As above	
6.31	Sutton Benger Brook - Source - Confluence with Avon								As above	
7	Impacts of abstraction on river flows									
7.1	Consult with water companies to devise sequential action plan to resolve low flow problems on the Malmesbury Avon	Agency Water Cos	£4k total	•	•	•	•	•	A final draft of a Memorandum of Understanding has been produced in consultation with the water companies and should be formally signed very soon	A Memorandum of Understanding has been signed by all 3 parties. The Agency is continuing to work closely with both Wessex Water and Bristol Water to resolve low flow problems on the Malmesbury Avon. All parties have agreed that field trials of potential solutions should be implemented on a staged basis, starting with those measures that may provide an immediate benefit without requiring expensive capital works. Ongoing until final solutions identified
7.2	Assess value for required environmentally acceptable flows	Agency	£20k total		•	•	•		Assessment delayed due to the need to develop an alternative to the PHABSIM methodology	Field work for the angling survey started in 1996. Further work is required in 1997. The results will be used to help set an environmentally acceptable flow at Great Somerford
7.3	Prepare estimate of value of benefits for various changes to present resource management arrangements	Agency	£20k total		•	•			Initial desk top scoping exercise complete. Further detailed studies involving angling and visitor surveys underway	Consultants working on behalf of the Agency have identified a range of potential benefits from studies of formal and informal recreation, property prices and 'non-use' values, (the amount people who do not use the river are willing to pay to resolve the problem). The consultants concluded that most of the lower cost remedies, such as changes to stream support, could be justified without including benefit associated with 'non-use'. <i>Action completed</i>
7.4	Modify stream support pumping conditions by agreement	Agency WWSL	£8k p.a.		•	•			Stream support arrangements modified by Wessex Water on a trial basis in 1995. Further prolonged trials in 1996 required to assess the sustainability of increased stream support	The trials involving increased stream support and changes to abstraction arrangements that took place last summer will be repeated and refined this year. Agency costs generally limited to monitoring

Issues and Actions	By	Cost	95	96	97	98	99	Progress Year One	Progress Year Two
7.5 Reach an understanding with the water companies on the scope for change to existing abstractions	Agency Water Cos	£1k p.a.		•	•			Bristol Water will reduce its abstractions from Shipton Moyne/Long Newton on a voluntary basis	Last summer, as a trial, Wessex Water switched abstraction from Cowbridge to other nearby groundwater sources for a two month period. This year the trial will be repeated to find out more precisely what benefit there is to the river. Bristol Water will continue to abstract at their reduced rate at Shipton Moyne/Long Newton
7.6 Investigate the nature and scale of the effect of abstractions on river flows on the Chalfield Brook	Agency	£5k p.a.	£2.5k	£5k				Investigations have identified inadequate field data on which to make an assessment. A programme to determine data needs will be developed and implemented in 1996	A programme to determine data needs was developed and implemented in 1996. A number of years of data will be needed before any meaningful analysis will be possible
7.7 Investigate the nature and scale of the effect of abstractions of river flows on the River Marden	Agency	£5k p.a.	£2.5k	£2.5k	Nil	Nil	Nil	The effects of abstraction have been investigated. The report will be published in August 1996	The Report was published in early 1997. The findings will be evaluated, and the need for any further actions determined by autumn 1997
7.8 NEW - The Agency will use its computer model of the catchment (upstream of Great Somerford Gauging Station) to examine the sustainability and relative benefits of the alleviation options currently being trialed in the field	Agency	£40K total			•	•			Consultants have been engaged to update and recalibrate the Agency's groundwater model. On completion the model will be used to examine the sustainability and relative benefits of the alleviation options currently being trialed in the field
8 Future demand for water resources									
A temporary increase in abstraction has been granted to Bristol Water to abstract from the River Severn into the Sharpness Canal. This arrangement expires in December 1997. The increase is from 215 Ml/d to 245 Ml/d (average) and from 69350 Ml/year to 76650 Ml/year. These maximum quantities are equivalent to those available to Bristol Water for public supply. The extension of this arrangement is dependant on Bristol Water improving the operational arrangements for abstraction for the Severn to the Sharpness Canal.									
9 Kennet and Avon Canal									
9.1 Improve the condition of the Long Pound to reduce leakage	BW		•	•	•	•	•	British Waterways have submitted a bid to the Heritage Lottery Fund for £29m to fund long term control improvements to the whole of the Kennet and Avon Canal. Of this, £850,000 has been identified for improvements to the Long Pound. A decision from the Lottery Administrators is expected end of May 1996. Continuing maintenance is addressing known leakage problems	BW have been awarded £25 million lottery funding for the Kennet and Avon Canal Project. £850,000 has been identified for improvements to the Long Pound (essential work to be undertaken winter 1997 subject to Heritage Lottery Fund approval)
9.2 Extend the back-pumping arrangements to source the Long Pound from Claverton, near Bath	BW Agency		•	•				A back-pumping scheme to service the operation of Caen Hill locks at Devises will be operational on 1 August 1996 at a cost of £1m	The back pumping system became fully operational on 1 August 1996 enabling BW to operate the flight each day of the week

Issues and Actions	By	Cost	95	96	97	98	99	Progress Year One	Progress Year Two
10 Improving flow distribution									
10.1 Tetbury Avon/Back Stream: Monitor newly established flow distribution arrangements	Riparian owners							New notch in weir installed early 1995 succeeded in providing sweetening flow to the Back Stream during summer low flow periods	Action completed, no further reporting in future plans
10.2 Daniels Well: Review options for improved flow distributions. Canvass public opinion. Implement change if required	Agency Riparian owners	£5k p.a.	£10k	£1.2k	£10k			Severe leakage problem identified. Temporary works successfully restored flows in 1995. It is likely a permanent repair to the river bank and leat will be necessary. Optimum flow distribution has been established and public opinion in the form of the Malmesbury Liaison Group was favourable. Capital works required summer/autumn 1996	Minor repairs to the leat in July ensured leakage was kept to a minimum in 1996, and a flow maintained throughout the summer. In 1997 the Agency will be developing plans for a more permanent repair, and undertaking any minor repairs necessary
10.3 Hullavington borehole: Negotiate with riparian owner. Install works to reduce water loss during low flow periods	Agency Riparian owners	£5k	£5k	£0.5k	£0.5k			Temporary works produced a successful solution in 1995. Negotiation with riparian owner to produce a permanent solution required in 1996	Temporary works produced a successful solution in 1996. If money becomes available the need for a more permanent solution will be reviewed in 1997
10.4 Negotiate with owner of Mill Farm Trout Lake to develop an action plan for improved flow distribution	Agency Owner of Mill Farm	£5k p.a.	£2.5k					Impact of abstraction from river and options for achieving improvements reviewed	No progress
11 River restoration and channel management									
11.1 Brinkworth Brook: Progress restoration scheme	Agency Riparian owners MAFF NFU CLAs FWAG CoCo	£10k p.a.	£5k	Nil				Progress limited to maintenance of previous work. Funds not available to implement	Post project appraisal planned. Seek funds to complete scheme
11.2 Draw up phased restoration plans for Semington Brook, Dauntsey Brook and sections of the River Avon	Agency		£5k		£35k			Plans drawn up for these rivers (but not River Biss).	Restoration plans to be drawn up for the River Biss. Bid for funds to implement Semington and Dauntsey Brook enhancements plus River Avon (selected reaches). Semington Brook project will be collaborative with local authority and Dauntsey Brook with Flood Defence
11.3 NRA Wetlands and R&D Project: Examine findings and implement within catchment	Agency							Phase 1 of R&D Project 381 published January 1996. The recommendations are being considered	Recommendations general, incorporated into existing work. Action completed, no further reporting in future plans

Issues and Actions	By	Cost	95	96	97	98	99	Progress Year One	Progress Year Two
11.4 Produce study and presentation of proposed enhancement of the channel at Abbey Mill, Malmesbury	Agency	£5k	£5k					Final report received. Benefit/Cost ratio assessed at 0.98 plus environmental benefits. Funds not available to implement this work	Forms part of Millennium bid for Malmesbury, as bid was unsuccessful work will not be implemented. <i>Action completed, no further reporting in future plans</i>
11.5 Reduce level of Sherston Avon above Linolite Sluice	Agency	£1k	£1k					Level of Sherston Avon reduced by 150 mm at Linolite Sluice, Malmesbury	<i>Action completed, no further reporting in future plans</i>
11.6 Produce guidance notes for riparian landowners	Agency	£1k	£1k					Final draft of riparian landowner guidance notes completed. Leaflet being produced as a South West Regional document	<i>Action completed, no further reporting in future plans</i>
11.7 Distribute guidance notes	Agency Civic Trusts Parish Councils	£2k p.a.	Nil	Nil	£2k	•	•	Distribution to begin summer 1996	Distribution planned for summer 1997
12 Conserving river and wetland wildlife									
Environment Agency staff are participating fully in preparation of SW Regional Habitat and Species Action Plans, and in the preparation and implementation of Local Plans as appropriate. During 1997 we will seek funds to implement habitat improvements on the Sherston Avon to benefit crayfish. Funds will be sought to carry out a survey of water vole sites in the catchment.									
13 Litter									
13.1 Review Agency work practices for dealing with litter at Agency operated river structures	Agency	£1.6k	£1.6k					Chippenham Gate new boom operating successfully. No other Agency owned land identified causing a problem	<i>Action completed, no further reporting in future plans</i>
13.2 Develop and implement strategy for dealing with litter on Agency owned land and property	Agency							See (1) above	<i>Action completed, no further reporting in future plans</i>
13.3 Identify worst locations and liaise with local authorities to develop strategy for litter control	Agency Local authorities	£25k	Nil	Nil	£15k	£10k		No progress	A bid has been made for funds for 1997/98 to the 'Make a Difference Project' fund'. Pending - still under review
14 Absence of trout recruitment on the Sherston Avon									
14.1 Carry out trout habitat survey of the Sherston Avon	Agency	£3k	£3k					A habitat survey was carried out in May 1995 and repeated in September 1995. The river lengths were walked and the river flow and the habitat was classified into one of four types: riffle, shallow glide, deep glide or pool. This information confirms distribution of riffles - mostly in the upper reaches. Pool and deep glide were mainly in the lower reaches	<i>Action completed, no further reporting in future plans</i>

Issues and Actions	By	Cost	95	96	97	98	99	Progress Year One	Progress Year Two
14.2 Carry out survey of juvenile trout distribution in Sherston Avon	Agency	£5k	£5k					In October 1995 using the findings from the habitat survey, 24 riffle sites were surveyed by electric fishing. It is concluded that brown trout recruitment does occur on the Sherston Avon and that the populations are self-sustaining. There was a non uniform distribution of the suitable spawning and juvenile habitat type throughout the river	Action completed, no further reporting in future plans
14.3 National R&D project on 'Effects of stocked trout on the survival of wild fish populations' (Project Number 452). Once completed the findings from this project will be reviewed to assess their relevance for the Sherston Avon	Agency							Project not completed yet. Due end of July 1996	Ongoing
15 The decline of native white clawed crayfish									
Sherston Avon - Further reintroduction of native crayfish has now been licensed by English Nature as part of the Agency's ongoing reintroduction project. This will involve transferring native crayfish from the Sherston area to two sites downstream of Easton Grey. River Marden - English Nature has also granted the Agency a licence to place caged native crayfish (canary cages) in the River Marden for a reintroduction feasibility study. The cages for this study will be located at Sprays Farm where recent trout habitat enhancement work has been completed.									
16 Recreation									
Wilts & Berks Canal - Contract for £62k restoration feasibility study led by North Wiltshire District Council (NWDC). Agency contribution £10k Chippenham - NWDC attempting to progress through lottery bid and working with SUSTRANS over riverside footpath/cycle-way. NWDC to make a presentation to Local Flood Defence Committee in July, looking for £500k from Environment Agency Calne - Working with NWDC over maximising opportunities to enhance river corridor during town centre redevelopment scheme. NWDC to put in bid for finance. The Environment Agency may be prepared to put in joint environmental bid for funds to uprate River Marden through Calne									

5. NEW RESPONSIBILITIES

5.1 Integrated Pollution Control

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

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

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

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

5.2 Air Quality

Air quality is an indicator of environmental quality; poor air quality can damage flora and fauna and buildings, and have significant effects on soils and water.

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

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

Our work also involves authorising and regulating emissions to air from certain prescribed processes (Part A processes) and regulating landfill sites and in particular landfill gas. This gas is principally a mixture of methane and carbon dioxide.

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

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

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

In due course, air quality standards may be prescribed in regulations made by the Government and obligations placed on local authorities regarding the establishment and operation of local air quality management areas. Local authorities will have to carry out periodic reviews of air quality in their areas.

Where standards are not being met or are not likely to be met an air quality management area should be declared, known as a *Designated Area*, and an action plan produced to improve air quality.

5.3 . Radioactive Substances

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

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

5.4 Waste Management

It is our responsibility to enforce the majority of UK waste legislation which governs the management of waste generated from household, commercial or industrial sources to ensure protection of the environment, prevent harm to human health and detriment to local amenities. This is done by controlling the transport, storage, treatment and disposal of waste.

Where this waste is regarded as particularly hazardous it is categorised as *special* waste and becomes the subject of a strict tracking procedure, under the Special Waste Regulations 1996, to ensure that it is disposed of at an appropriate site.

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

Sites are principally controlled by issuing waste management licences. The licence contains conditions on the construction, maintenance and operation of sites, and stipulates monitoring requirements where we deem it necessary. The environment is protected by appropriate conditions which are agreed internally and circulated to external bodies as a consultation exercise prior to the issue of a licence.

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

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

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

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

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

Key roles in waste will be provided by:

- *the Government in drawing up the National Waste Strategy, using data on current and future waste arisings and disposal facilities, and advice from the Environment Agency*
- *the Waste Planning Authorities (County Councils and the new Unitary Councils) who are required through land use policies and proposals to make provision for sufficient facilities*

6. COMPLETED ACTIONS

- Issue 1.1 Complete catchment drainage model. Catchment drainage model completed at the end of the 2nd Annual Review period - March 1997.
- Issue 2.1 Nutrient enrichment studies - collect chemical and biological data for the Upper Bristol Avon. Proposal sent to Head Office for consideration.
- Issue 3.1 Farm discharges on Gauze Brook. All farms visited. Major improvements at one site.
- Issue 5.3 Unsewered areas and sewerage infrastructure -Environment Agency to issue appropriate consents for new sewerage system in Malmesbury.
- Issue 6.1 Site specific water quality issues - low dissolved oxygen in the headwaters of the Tetbury and Sherston Avon.
- Issue 7.3 Impacts of abstraction on river flows - Prepare estimate of value of benefits for various changes to present resource management arrangements. This action is now complete. However, when we have come to a decision of a final low flow solution this information will need to be reworked and combined with estimates of scheme costs in order to produce a robust business case supporting any proposed changes.
- Issue 10.1 Improving flow distribution - Tetbury Avon/Back Stream: Monitor newly established flow distribution arrangements
- Issue 11.3 River restoration and channel management - NRA Wetlands & R&D Project - examine findings and implement within catchment
- Issue 11.4 River restoration and channel management - Produce study and presentation of proposed enhancement of the channel at Abbey Mill, Malmesbury.
- Issue 11.5 River restoration and channel management - Reduce level of Sherston Avon above Linolite Sluice.
- Issue 11.6 Produce guidance notes for riparian landowners.
- Issue 13.1 Litter - Review Environment Agency work practices for dealing with litter at Agency operated river structures.
- Issue 13.2 Litter - Develop and implement strategy for dealing with litter on Agency owned land and property.
- Issue 14.1 Absence of trout recruitment on the Sherston Avon - Carry out trout habitat survey of the Sherston Avon.
- Issue 14.2 Absence of trout recruitment on the Sherston Avon - Carry out survey of juvenile trout distribution in Sherston Avon.

7. GLOSSARY OF TERMS

AMP	Asset Management Plan
BOD	Biochemical Oxygen Demand
BW	British Waterways
CLA	Country Landowners Association
CMP	Catchment Management Plan
CoCo	Countryside Commission
CSO	Combined Sewer Overflow
DO	Dissolved Oxygen
DoE	Department of the Environment
EC	European Community
FWAG	Farm Wildlife Advisory Group
IPC	Integrated Pollution Control
LEAP	Local Environment Agency Plan
LA	Local Authority
MAFF	Ministry of Agriculture, Fisheries and Food
NRA	National Rivers Authority
NWDC	North Wiltshire District Council
pa	per annum
R&D	Research and Development
RE	River Ecosystem
RQO	River Quality Objective
RSPB	Royal Society for the Protection of Birds
STW	Sewage Treatment Works
WWSL	Wessex Water Services Ltd

MI/d	megalitres per day (1 megalitre = 1,000,000 litres)
mg/l	milligrams per litre
µg/l	micrograms per litre
km	kilometre
km ²	square kilometre
£k	thousands of pounds
£M	millions of pounds

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