

Box 11

# catchment management plan



## HAMPSHIRE AVON

second annual review

November 1996



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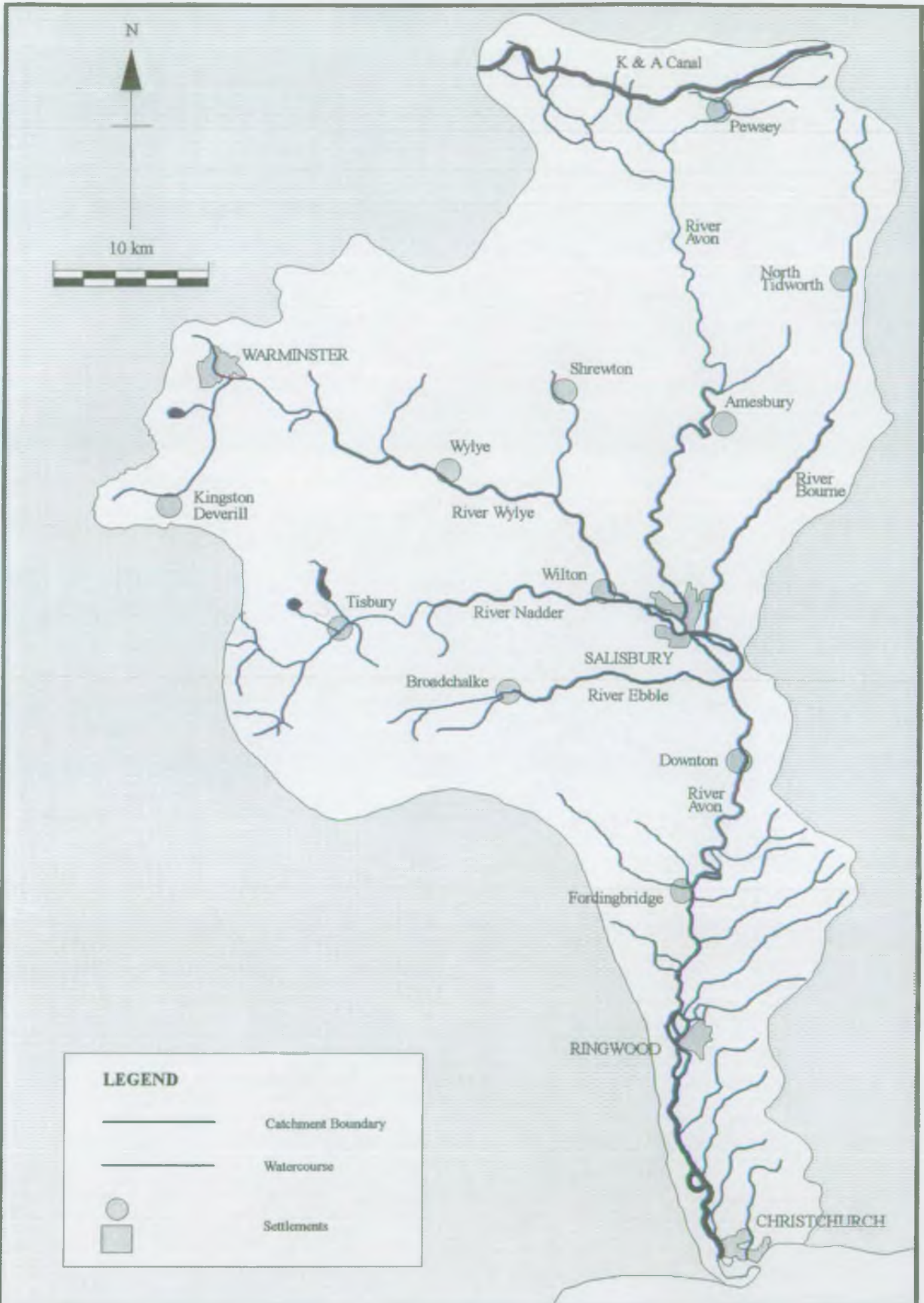
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MAP 1 : HAMPSHIRE AVON CATCHMENT



## VISION FOR THE CATCHMENT

The Hampshire Avon catchment is home to 200,000 people who depend on the water environment in many ways, and value it for the quiet pleasure and enjoyment that it brings their local communities. The upper part of the catchment falls within an Area of Outstanding Natural Beauty, and the river makes an important contribution to the rural economy through tourism as well as through agriculture and recreation.

The catchment provides an important link between three areas: the chalk downland of Wiltshire, the Dorset heathlands and the New Forest. This is reflected in a wide range of semi-natural habitats including good examples of lowland heath, unimproved grasslands and ancient broadleaved woodlands. The river floodplain and associated ditch system is one of the most important in Britain for the diversity of plants and animals which it supports.

The chalk aquifer underlying the upper catchment is a major source of water for domestic, agricultural and industrial purposes as well as the source of all major tributaries in the catchment. The rivers also provide the principal method of assimilating treated industrial and domestic effluent, and are therefore subject to considerable pressures.

Our objectives in the management of the catchment are to :

- *ensure that using the cleansing capacity of the rivers to assimilate treated effluents does not impair the considerable ecological and fishery potential of the Hampshire Avon*
- *develop and implement a water resource strategy which should not only ensure adequate supplies of water for domestic, industrial and agricultural purposes but also maintain sufficient flows in rivers for fisheries, recreation, conservation and effluent dilution purposes*

Establishing strong Environment Agency involvement and links with local communities and their representatives is seen as essential so that local views are respected in future development decisions. It is important that local planning authorities include policies in their local plans which protect and enhance the needs of the water environment. The Agency has a commitment to :

- *work with all relevant parties to implement the principles of sustainable development*

The government has indicated strong support for the conservation interests of the Avon Valley by the implementation of a wide range of conservation designations, including a significant number of Sites of Special Scientific Interest (SSSI), the recently confirmed Environmentally Sensitive Area (ESA) designation, and the proposed classification as a Special Protection Area (SPA) for birds and a Ramsar site. The complete fulfilment of many of these designations requires suitable management of water levels, but this must also take into account the Agency's Flood Defence role. We will achieve this by:

- *protecting people and property from flooding*
- *developing a water level management strategy to provide a basis for agreed floodplain land use management, recognising the need to conserve and enhance the wetland wildlife interest of the valley*

## 1 INTRODUCTION

This is the Second Annual Review of the Hampshire Avon Action Plan which was published in 1994. It introduces the Environment Agency, summarises progress made with actions and introduces seven new actions. Previous publications relating to this catchment contain more background detail, and this Review should be read in conjunction with these publications:

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

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

We will :

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

Our Aims are :

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

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

## 1.2 The Environment Agency and Catchment Management Planning

Catchment Management Plans (CMPs) produced by the NRA will continue to be called CMPs, and subsequent reviews will focus mainly on water related issues. This will be the case with this Second Annual Review of the Hampshire Avon CMP. Issues relating to Integrated Pollution Control (IPC), radioactive substances (RAS), waste management and air quality will only be incorporated if necessary. Appendices 6.1 - 6.4 give a brief overview of our responsibilities in these areas.

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

## 3 OVERVIEW OF THE CATCHMENT

The Avon rises in the Vale of Pewsey and, with its tributaries the Bourne and Wylve, drains the chalk of Salisbury Plain. The Nadder, which is joined by the Wylve near Salisbury, drains the escarpment of the South Wiltshire Downs and the Kimmeridge clays of the Wardour Vale. The Ebbel and the Ashford Water also drain the South Wiltshire Downs and join the Avon downstream of Salisbury and Fordingbridge respectively.

Below Fordingbridge, a number of streams drain the tertiary deposits of the New Forest. The Avon itself drains into Christchurch Harbour, where it is joined by the Stour and Mude before discharging into the English Channel.

The river has a geographical catchment area of some 1,701km<sup>2</sup>. The total fall of the river from Pewsey to the sea is 110m and the average gradient downstream of Salisbury is approximately 1:1,000.

The other significant waterway in the catchment is the Kennet & Avon Canal, lying approximately east-west across the head of the catchment.

The catchment covers parts of the counties of Wiltshire, Hampshire and Dorset, and encompasses areas represented by Kennet, West Wiltshire, Salisbury, East Dorset and New Forest District Councils, and Christchurch and Test Valley Borough Councils.

The catchment is predominantly rural and has a population of approximately 200,000. The largest towns are Christchurch, Salisbury, Warminster, Ringwood, Amesbury, Fordingbridge and Pewsey. In addition there are several major military establishments on Salisbury Plain.

Industry is mainly light in nature and situated in the towns. Tourism is economically important in the catchment, particularly at Salisbury, Fordingbridge and Christchurch, and the water environment is an important feature.

## 4 SUMMARY OF PROGRESS

### 4.1 WATER RESOURCES

#### 1995 Hydrological Summary

The distribution of rainfall throughout the year was markedly atypical with two very wet months at the beginning of the year followed by a series of very dry months, which combined with some prolonged periods of exceptionally high temperatures led to what became known as the *1995 Drought*. A wet September with over twice the monthly average rainfall in some places, followed by a reasonably wet November and December, ensured that the annual total was above the 1961-90 average.

Groundwater levels following a wet winter were at their highest in February. At Tilshead groundwater levels reached the surface and contributed to local flooding. By October levels had fallen to their lowest since records began in 1977. The well at Woodyates Manor fell to 3.5m (69.53mAOD) below the expected average annual minimum by October, the lowest level recorded since 1990.

River flows in the catchment were equally dramatic with out-of-bank flows at South Newton (Wylfe) and Knapp Mill (Avon) during January and February transformed to lows representing about two thirds of the monthly long term average in August.

A comparison with 1976 puts 1995 in true perspective; flows at Amesbury (Avon) reached a minimum in August 1995 of 1.080 cumecs compared with May to September 1976, when mean monthly flows failed to exceed 1 cumec. At South Newton, flows reached 1.223 cumecs (minimum mean monthly) in August 1995; flows did not exceed this for nine consecutive months between January and September in 1976.

As a consequence of these low flows five out of seven abstraction licences with conditions tied to river gauging stations were subject to cease or restraint notices during 1995 and the stream support scheme operating in the Upper Wylfe reached maximum output in August.

#### Progress with River Wylfe Low Flow Study

Phase II (Wylfe) of the water resource investigations on the upper Avon has now been completed and reported early in 1996. An Agency leaflet, *River Wylfe Low Flow Study - Progress and Further Investigations*, containing further details of our work in the Wylfe catchment is now available.

This investigation is one of our more prominent Alleviation of Low Flow studies in the South West Region. It examines the impact of public water supply abstractions from boreholes on the water resources and environment of the Wylfe catchment. This study has found that the most significant impacts on flow are in the upper reaches of the river, near the Deverills, and in the winterbournes (eg Chitterne Brook and River Till) that join the Wylfe.

During 1996-97 we will be clarifying the environmental impact of these flow changes on all parts of the Wylfe; this includes detailed fisheries and habitat surveys. We will also be discussing with Wessex Water Services potential changes to their pattern of public water supply pumping in the catchment and trialing new stream support boreholes to improve flows throughout the catchment and augment flow in the winterbournes respectively.

### 4.2 FISHERIES

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During spring 1996 the first sonic deflectors were installed on water meadow channels at Britford; these emit pulses of sound which discourage smolts from entering these channels. This is part of the ongoing programme of Avon migration improvements.



### 4.3 FLOOD DEFENCE

#### Flood Warning

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

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We issue warnings to the Police, local authorities, and in places 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. Over the next five years the Agency will be improving the warning service so that more information reaches those who need it.

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.

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#### River Quality Objectives

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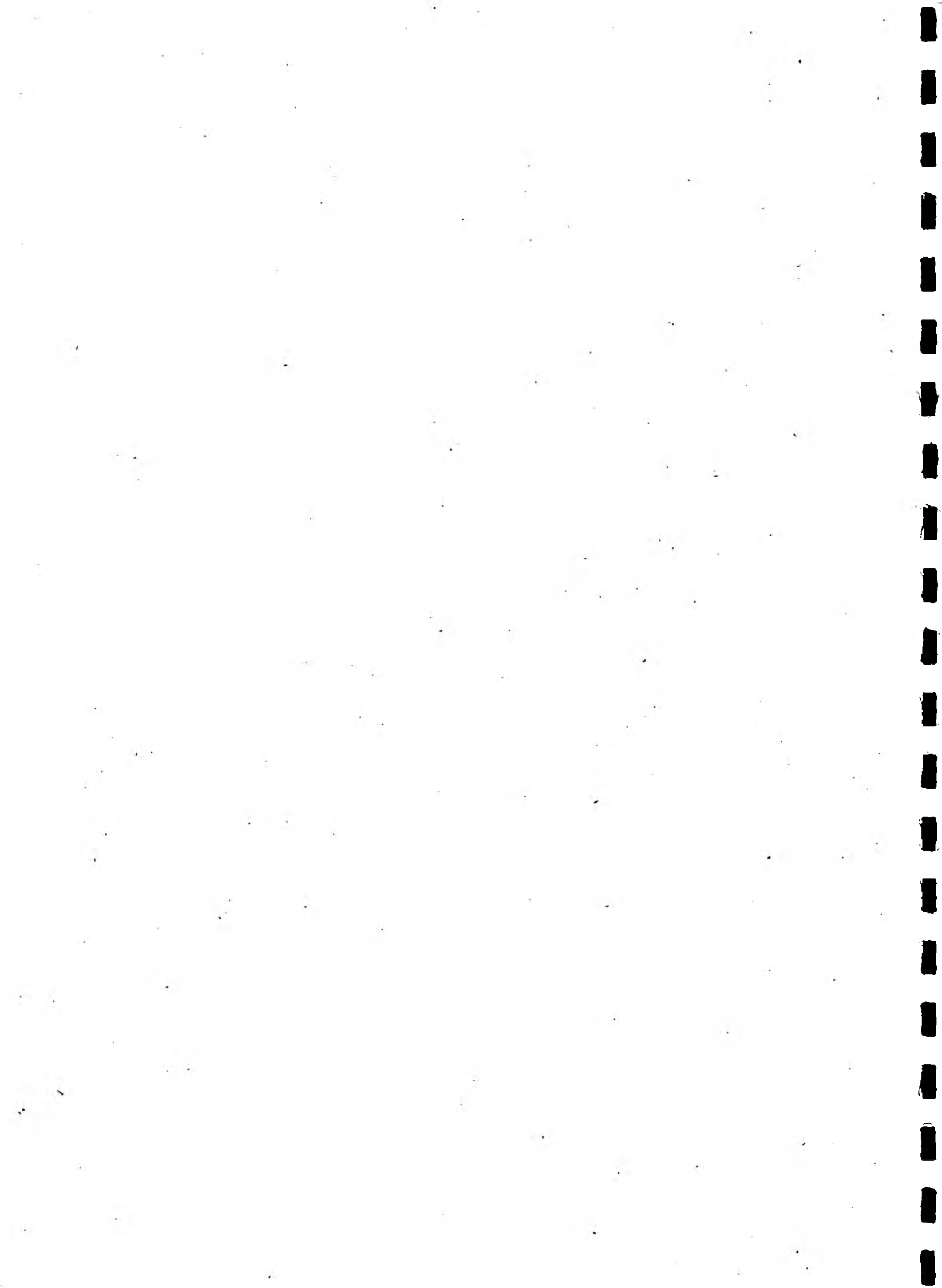
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We have started a Landcare Project during the year which aims to address problems in watercourses caused by non-point source pollution. Such problems include *chalkstream malaise*, choked salmon spawning gravels and pesticide residues.

Work has continued on the first phase of river bed sediment monitoring. In addition, an assessment is underway to identify areas of high diffuse pollution risk in the upper Avon tributaries. The assessment will be based on the erodibility of soils, the steepness of slopes, high risk landuses and rainfall. This combination of factors is likely to give the highest risk of soil erosion and land runoff. Work is in hand to assist the MoD in developing an environmental strategy for their Salisbury Plain training area. At the same time, groups of riparian owners and fishery managers are being asked to focus on problems of non-point source pollution and to provide information and advice to the Agency.

In 1997 we intend to discuss non-point source pollution with land owners who farm in high risk areas and ask them to explore, in partnership with the Agency, whether land use management may be



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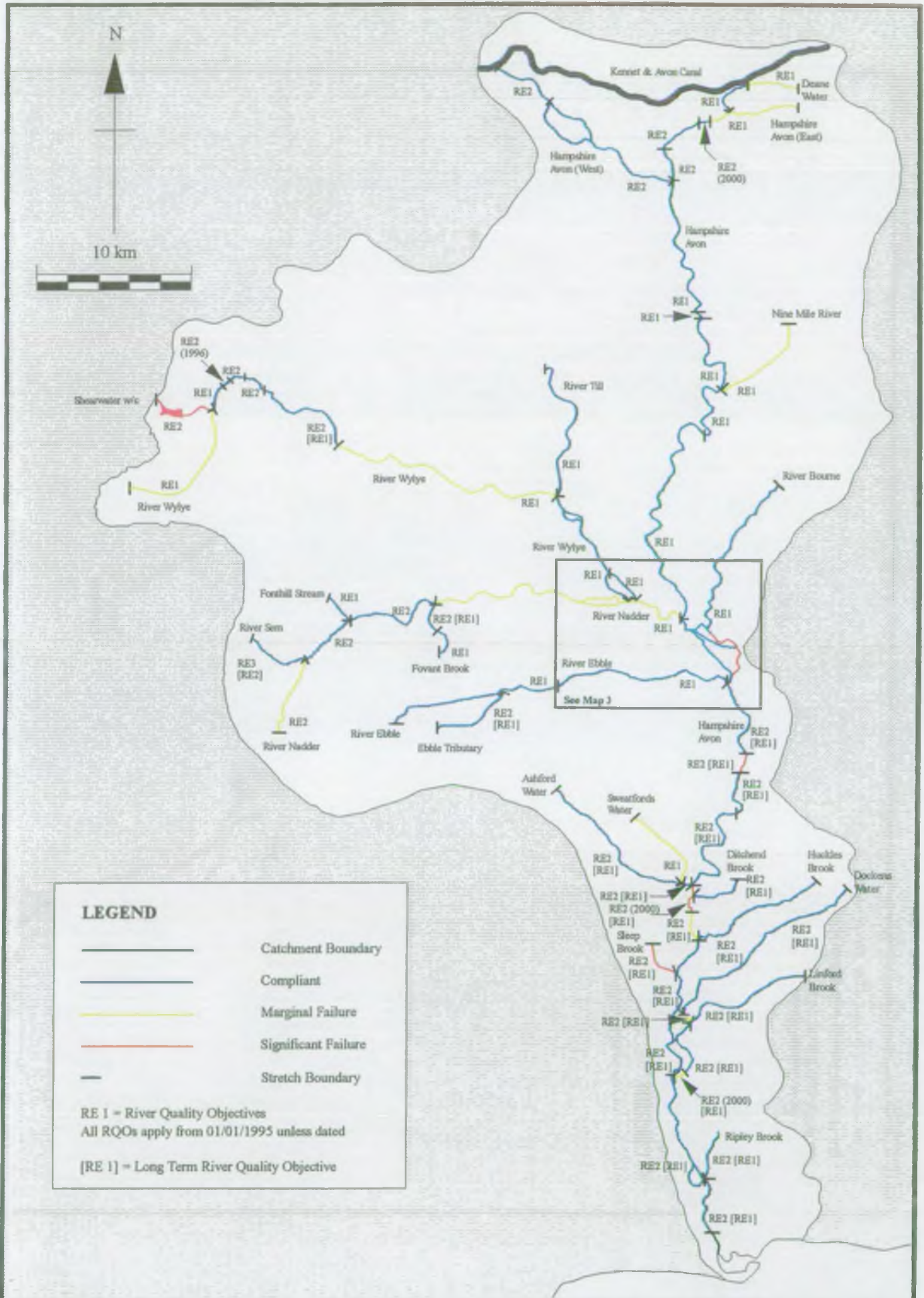
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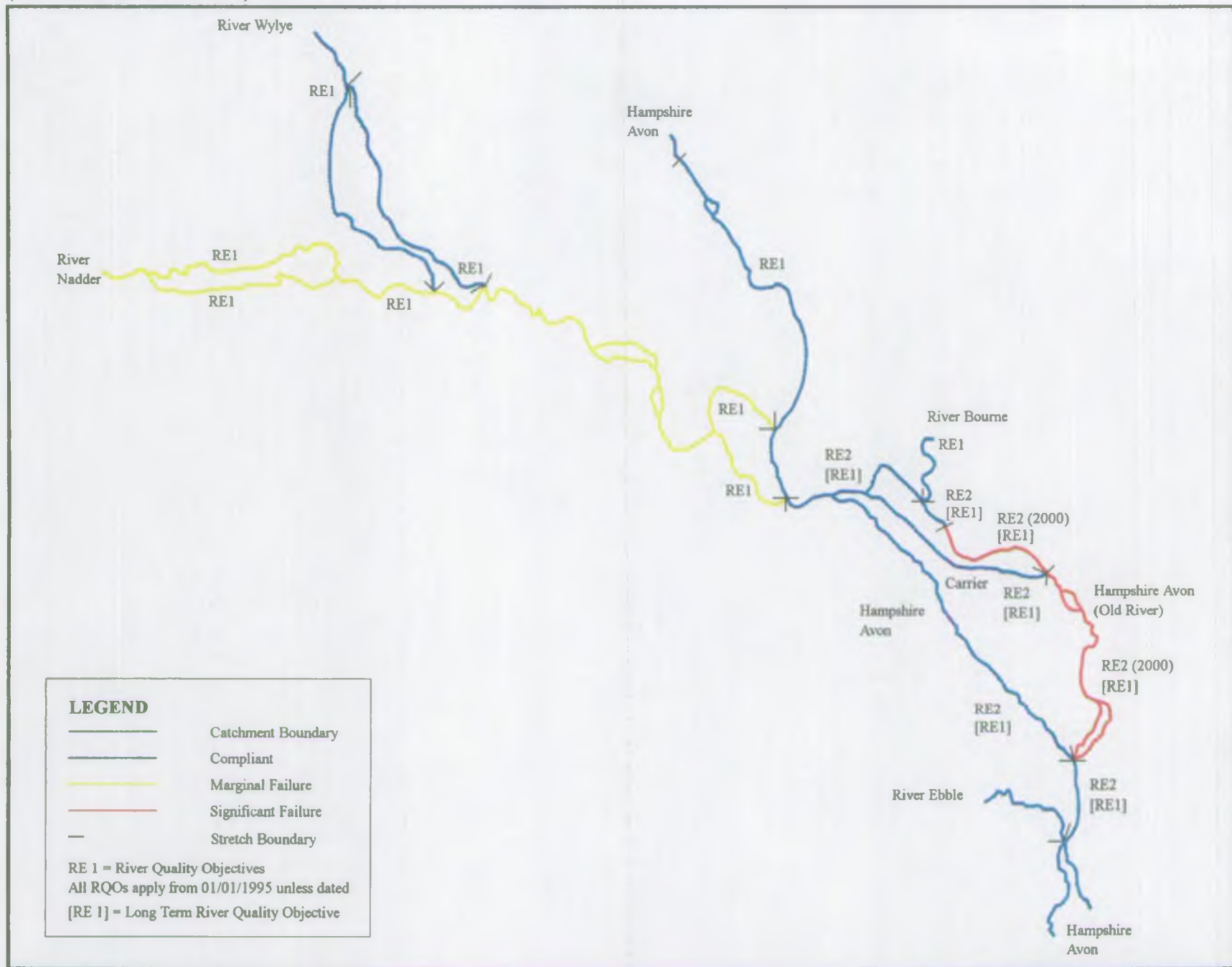
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**MAP 2 : HAMPSHIRE AVON CATCHMENT - COMPLIANCE WITH PROPOSED RIVER QUALITY OBJECTIVES (RE CLASSIFICATION) 1995**





**MAP 3 : HAMPSHIRE AVON (SALISBURY AREA) - COMPLIANCE WITH PROPOSED RIVER QUALITY OBJECTIVES (RE CLASSIFICATION) 1995**



**LEGEND**

- Catchment Boundary
- Compliant
- Marginal Failure
- Significant Failure
- Stretch Boundary

RE 1 = River Quality Objectives  
 All RQOs apply from 01/01/1995 unless dated  
 [RE 1] = Long Term River Quality Objective

modified to reduce diffuse pollution.

#### 4.5 Conservation

##### Biodiversity

The Agency is the contact point for six species and habitats in the South Wessex Area which have been defined by the UK Biodiversity Steering Group. Action plans will be produced for these species and habitats, and the Agency will be involved in drawing up these plans. More research is required to determine which of these species are present within the Hampshire Avon catchment, although some data has already been collected (eg white clawed crayfish). The actions will be incorporated into LEAPs, although many of the actions will be covered by standard Agency duties. The Agency will also be taking an active role in helping maintain and improve other habitats and species for which we are not the contact point.

The Agency is committed to maintaining and improving the biodiversity of the Hampshire Avon catchment and will be working collaboratively with other involved groups, eg English Nature, RSPB, Local Planning Authorities and the County Wildlife Trusts.

#### 4.6 Development

##### Salisbury Bypass

The proposed route for the Salisbury Bypass crosses the floodplain of the Avon and the Nadder. The Secretaries of State have postponed the final decision until February 1997 to ensure that all feasible measures to mitigate the potential for harmful effects have been considered.

We recognise the importance of the local environment and will work closely with the Department of Transport and their contacts and consultants to ensure that damage is prevented and that opportunities to enhance the environment are taken up fully.

### 5 ACTION PLAN MONITORING REPORT

The Action Plan is the means by which the vision of the catchment is turned into reality and outlines detailed proposals for resolving the issues identified. The following tables update the progress with each issue identified in the Hampshire Avon Catchment Management Plan Final Report for the period November 1995 to October 1996. The tables also report on several new issues raised since publication of the Final Report.

Issues & Actions	By	Cost	94	95	96	97	98	Future	Progress Year One	Progress Year Two
<b>Local impacts on water quality from STW discharge at Warminster</b>										
1.1a. Issue a more stringent consent to limit the effluent load in the face of increasing contributions from the 'Center Parcs' development.	the Agency		o						The new consent is currently being rewritten in the latest National format and will be issued shortly. The DoE have stated that they will not 'call in' the application.	The issue of the new consent has been delayed. It is anticipated that the new the new consent will now be issued before the end of 1996.
1.1b. The STW is being extended to meet the new consent standards.	WWS		o						The STW extensions have been completed and commissioned. Early results since the beginning of 1995 suggest that the reach will attain RE2 quality.	Work has been completed and the reach achieved RE2 in 1995.
1.1c. Carry out a Drainage Area Study to identify sewerage problems.	WWS the Agency		o	o					The Drainage Area Survey will be started during 1995/96.	This Drainage Area Survey has been deferred for the present.
<b>Local impacts on water quality from STW discharge at Salisbury</b>										
1.2a. Seek approval from DoE & OFWAT for the inclusion of this STW within the AMP2 priority list as a 'High Profile' works.	the Agency DoE OFWAT		o	?					Funding to improve Salisbury STW has been agreed.	Progress continues as 1.2b. <i>Action completed, no further reporting in future plans required.</i>
1.2b. If approval is gained, negotiate and implement the best option to reduce the impact of the effluent on the river.	WWS the Agency	£4.5M		?	?	?	?	?	Process optimisation work is underway and the NRA is discussing the scheme design with WWS.	The scheme is progressing.
1.2c. Review the impact of the Britford flow apportionment scheme on dilution flows.									First years work with flows properly apportioned produced an improvement in water quality. See also Action 13.	Apportionment scheme is continuing. Investigation into automating controls completed. See also Action 13.
1.2d. Collect data according to the Agency national Urban Waste Water Treatment Directive guidelines.									See Action 3a.	See Action 3a.
1.2e. Perform option appraisal for sewerage problems highlighted in the completed Drainage Area Plan and effect improvements.	WWS		o	?					The review of the Drainage Area Survey showed few specific water quality problems relating to storm overflows. The major complaint related to sewage debris at the Bugmore culvert. A few minor overflows have been eliminated and screening has been installed on the 3 largest storm sewer overflows in Salisbury.	There have been very few overflows noted since the improvements to the sewerage system.

Issues & Actions	By	Cost	94	95	96	97	98	Future	Progress Year One	Progress Year Two
<b>Local impacts on water quality from STW discharge at Ringwood</b>										
1.3a. Investigate the impact of the Ringwood STW discharge on the Bickerley Mill Stream.	the Agency		o	?					A new sampling site has been established and re-located further downstream to allow better mixing. Some improvement in effluent quality has also been noted. Ringwood STW has been added to the reserve list of AMP2 discretionary sites.	Sampling is continuing.
<b>Local impacts on water quality from STW discharge at Pewsey</b>										
1.4a. Renovations to filter beds and humus tanks at Pewsey STW are being carried out.	WWS		o	?					This work was completed in April 1995, and further works are planned. Significant improvements in the effluent have been noted in 1995, with an RE1 classification likely.	No further work planned. <i>Action completed, no further reporting in future plans required.</i>
1.4b. Seek approval from DoE & OFWAT for the inclusion of the STW within the AMP2 priority list as a 'High Profile' works.	the Agency DoE OFWAT		o	?					Pewsey is on the reserve list of AMP2 discretionary schemes. It will be some time before we know whether funds will be available to tighten the present consent limits.	No longer on reserve list as reach achieved RE1 in 1995. <i>Action completed, no further reporting in future plans required.</i>
1.4c. If approval is gained, negotiate and implement the best option to reduce the impact of the effluent on the river.	WWS the Agency			?	?	?	?	?		See 1.4b. <i>Action completed, no further reporting in future plans required.</i>
1.4d. Perform option appraisal for any sewerage problems emerging from the completed Drainage Area Plan.	WWS		o	?					The drainage area survey has been completed but WWS has not yet passed the findings to the NRA.	The drainage area survey is currently being remodelled and will be presented to the Agency as soon as possible.
<b>Local impacts on water quality from inadequate farm waste storage facilities and irrigation of farm waste to land especially in the Western and Eastern Avon, Sem and Nadder catchments</b>										
1.5a. Visit all farms in the target catchments to assess pollution risk from farm waste storage facilities.	the Agency	£15K	o	o					All high-risk farms on the Eastern & Western Avon have been visited and none found unsatisfactory. Farms on the Sem & Nadder are currently being visited.	Farms survey on Sem and Upper Nadder completed and none found unsatisfactory. Lower Nadder farm survey is progressing.
1.5b. Farmers to improve farm waste storage facilities where necessary to comply with control of pollution (Silage, Slurry & Agricultural Fuel Oil Regulations 1991).	Farmers the Agency		o	o	o	o	o		Many farms have carried out improvements; this is ongoing but considerable improvements are being achieved which can be seen by the reduction in farm waste incidents.	Improvement continues. No pollution incidents reported during this review period.
1.5c. Farmers to produce effluent management plans where necessary.	Farmers the Agency		o	o	o	o	o		Farm waste management plans are being produced where appropriate, and farmers benefit by knowing which areas are suitable for spreading of waste.	No change, although there has been a reduction in the number of plans being produced since grant aid ceased to be available from December 1994.
1.5d. Promote the use of buffer zones where appropriate.									See Action 16. Now in Rural Land Use Group of NRA Business Plan. A leaflet has been produced by WWT.	See Actions 16a-16d.

Issues & Actions	By	Cost	94	95	96	97	98	Future	Progress Year One	Progress Year Two
<b>Local impacts on water quality from discharges from MoD bases</b>										
1.6a. Formalise discharge arrangements by setting consent conditions.	the Agency		o	?					All discharges are to be consented by March 1996.	30 consents issued for MoD bases. A further 4 discharges require consenting; 3 are currently being processed and 1 application has yet to be submitted.
1.6b. Monitor the impacts of MoD discharges (costs being recoverable from the discharger through the Charging for Discharge system) and review the compliance with conditions.	the Agency		→	→					Some routine monitoring already taking place. All discharges greater than 5m <sup>3</sup> /d will be monitored when they have been consented.	Monitoring programme to be implemented. Issues relating to access also need to be resolved.
1.6c. Promote awareness through full liaison with Base representatives. The negation of consent enforcement by Crown immunity means that exerting influence in this way is the best available alternative.	the Agency MoD		→	→					Ongoing discussion with MoD representatives.	Several meetings have been held with MoD representatives. Work is in hand to support a joint project with the MoD to develop an environmental strategy for MoD use of the whole of Salisbury Plain.
1.6d. Advise those responsible for the maintenance of MoD sites on good surface water management practice (drainage from vehicle wash areas and the control of herbicide applications are particularly important issues).	the Agency MoD		→	→					Ongoing discussion with MoD representatives.	
<b>Local impacts on water quality from backwashing activity at Blashford Lakes Intake</b>										
1.7a. Formalise a satisfactory operating regime for backwashing within the framework of a consent.	the Agency WWS		o	?					An operating protocol was agreed between NRA and WWS. The current low level of use has reduced the likelihood of an incident. The progression of AMP2 schemes and the consenting of MoD and cress farm discharges means that this Action is currently low priority.	Discussion still underway regarding consenting of backwash.
<b>Local impacts on water quality from discharges from watercress farms</b>										
1.8a. Protect water quality in the receiving water course by issuing discharge consents which allow the control of discharge quality.	the Agency		o	o	o				All discharges are to be consented by March 1996.	All cress farm discharges in the Hampshire Avon catchment were consented by the end of March 1996. Action completed, no further reporting in future plans required.
1.8b. Monitor and review discharge consents.	the Agency		→	→	→					Monitoring programme being implemented.
1.8c. Joint R&D project to produce watercress strains with improved resistance to the crook root fungus and watercress yellow spot virus in order to reduce the need to treat with zinc.	the Agency Cress Growers Assoc	£24K	o	o	o				Underway but not very hopeful of success.	Continuing, no success so far. A reappraisal of the project will take place in 1996.

Issues & Actions	By	Cost	94	95	96	97	98	Future	Progress Year One	Progress Year Two
<b>Local impacts on water quality from discharges from watercress farms (continued)</b>										
1.8d. Monitor the effect of off-label use of pesticides on the receiving water.	the Agency		o	o	o	o	o		Use has commenced on a very limited scale, and we are investigating ways of assessing any impact.	Investigation will take place subject to available funding.
<b>Water quality problems in Christchurch Harbour</b>										
1.9a. Seek approval from DoE and OFWAT for the inclusion of installation of UV disinfection with all-year operation at Christchurch STW to reduce the bacteriological impact on the Harbour and nearby bathing waters.	WWS	£2M		?	?	?	?	?	OFWAT have notified NRA that disinfection of the STW effluent is included in the approved AMP2 programme but no date has been agreed for implementation.	WWS has announced that it will install secondary treatment and disinfection for all its sewage discharges to recreational and bathing waters by 2005. This will include proposals to improve the effluent from Christchurch STW by installing UV disinfection. The timing of these improvements has yet to be determined.
1.9b. Rectify the problem of premature use of storm tanks and overflow at Christchurch STW by effecting work to increase the flow to full treatment.	WWS		o						WWS has raised the storm setting at Christchurch STW to the consent requirement.	This was effective, but since completion another uprating of the works is in hand to further improve the situation. New outfall to Hampshire Avon completed and commissioned in October 1996.
1.9c. Perform option appraisal for sewerage problems highlighted in the completed Drainage Area Plan and effect improvements.	WWS		o	?						
1.9d. Collect data according to the Agency national Urban Waste Water Treatment Directive guidelines.									See Action 3a.	See Action 3a.
<b>Review of Target Water Quality Objectives in the catchment</b>										
1.10a. We will review the Water Quality Targets for the Hampshire Avon Catchment.	the Agency			o					Subsequent evaluation suggests that some 1992 classification data were anomalous. The Bourne has been upgraded to RE1 on the basis of 1994 data.	Maps 2 and 3 outline compliance with the proposed RQOs for the Hampshire Avon catchment. The reasons for non compliance are currently under investigation. Once the reasons are known, action will be taken to ensure compliance.

Issues & Actions	By	Cost	94	95	96	97	98	Future	Progress Year One	Progress Year Two
<b>The occurrence of atrazine in both groundwater and surface waters is of concern</b>										
2a. Farm campaign to raise awareness of the issue and promote best practice for the safe use of pesticides.	the Agency	£11K	o	?	?	?	?	?	Farm campaign carried out in Nadder, Sem and lower Avon. Problems appear to arise from the disposal of washings of spray equipment rather than excessive use.	Campaign was started but appears to be more widespread than was anticipated. National Leaflet ( <i>Agricultural Pesticides and Water</i> ) is now available covering canister washings and disposal.
2b. Continued monitoring to establish extent and trend of atrazine occurrence.	the Agency	?	o	o	o	o			Monitoring is continuing using water supply boreholes as sampling points.	Monitoring is continuing; results show that levels have not exceeded the EC Drinking Water Directive (groundwater) in the period covered by this review.
2c. National R&D Project to develop best practice guidelines to ensure that waste pesticides are efficiently disposed of.	the Agency	£40K	o	o					Contract about to be let.	Contract has been let to WRC and South Wessex Area Water Quality is represented on the project board. One of the catchments investigated will be the Hampshire Avon. Findings to be reported Spring 1997.
2d. National R&D Project to develop more environmentally friendly methods of rotational arable farming to reduce pesticide usage.	the Agency MAFF	£105K	o	o	o	o			Contracts let, with projects at ADAS Winchester Experimental Farm and Bristol University Long Ashton Research Centre.	Projects are running with the Agency project officers at Exeter and Winchester.
2e. The Agency National Centre of Expertise on Toxic and Persistent Substances to raise atrazine nationally with MAFF and HSE.	the Agency MAFF HSE		o						The issue was raised. MAFF have issued new guidelines removing atrazine from non-agricultural use and reducing its use in agriculture. Further discussions ongoing.	Discussions are ongoing.
<b>Eutrophication</b>										
3a. Collect data according to the Agency National guidelines to investigate the potential nomination of 'Sensitive Waters' to be designated under the Urban Waste Water Treatment Directive.	the Agency	£45K	o	o	o				Sampling is taking place on the Avon and Christchurch Harbour throughout 1995 to assess chemical nutrient status, planktonic algal chlorophyll concentration and species counts, and changes in aquatic plant populations. Larger estuarine algae will be assessed by aerial photography later in the year at peak growth. Automatic chemical monitoring has been deployed at a number of sites to monitor changes in oxygen levels.	We are compiling our report as part of a national submission to DoE by April 1997.
3b. Promote land use practices which reduce runoff of nutrients.	the Agency			→					A range of R&D projects are in hand to promote awareness of diffuse pollution issues and to develop a strategy to influence land management.	Best Practice R&D project is at a draft final report stage; the Landcare project is underway. Targeting of best management practices advice to be carried out.

Issues & Actions	By	Cost	94	95	96	97	98	Future	Progress Year One	Progress Year Two
<b>Groundwater contamination</b>										
4a. Implement the Agency Policy and Practice for the Protection of Groundwater.	the Agency		→	→					Groundwater Planning Policy applied in determination of authorisations and in response to consultations by Local Planning Authorities and developers. The NRA published a Groundwater Vulnerability map covering most of the catchment in 1994.	Ongoing; Groundwater Vulnerability maps covering most of the catchment have now been published. The remainder of the catchment will be covered by a map due for publication in 1997/98. <i>Implementation of policy now regarded as routine. No further reporting in future plans required.</i>
<b>Water resource investigations on the Hampshire Avon</b>										
5.1a. Results of current investigations on the Hampshire Avon (Upper and Lower) to be assessed and strategy defined.	the Agency	£25K	o						The contracted investigation continues, and the Final Report is now expected by the end of 1995.	Phase II (River Wylfe) of Upper Hampshire Avon study completed and reported in March 1996. Further work on the Lower Avon on hold pending conclusion of national R&D project on <i>minimum acceptable flows.</i>
5.1b. Regional Water Resource Strategy to be produced for the area. Options listed in the consultation document will be reviewed in the course of these investigations.	the Agency		o						South Western Region Water Resources Development Strategy published in April 1995.	<i>Action completed, no further reporting in future plans required.</i>
5.1c. Strategy contains reference to possible storage reservoirs in the lower Avon for which baseline environmental studies are to be identified by March 1996.	the Agency	£1K		o	o	o				Baseline environmental studies for water resource development of Lower Hampshire Avon to be defined for benefit of water company options evaluation.
NEW 5.1d. Construct two new boreholes for augmentation of the Chitterne Brook and River Till, and undertake test pumping and review seasonal operating regimes of existing public water supply boreholes in River Wylfe catchment.	the Agency WWS	£800K			o	o	o			Site identification and access negotiation in progress.
NEW 5.1e. Produce an explanatory brochure for public dissemination of the findings of the River Wylfe studies and future plans.	the Agency	£5K			o					Published and disseminated October 1996.
NEW 5.1f. With the co-operation of water companies and in the light of recent experience, review the needs for future water resources developments and the potential for their opportunities in collaboration projects in the Lower Avon.	the Agency BWHW WWS					o	o			To be progressed in the course of water company plans in preparation for next OFWAT reviews.



Issues & Actions	By	Cost	94	95	96	97	98	Future	Progress Year One	Progress Year Two
<b>Define environmental flow need</b>										
5.2a. Develop flow recommendations using fish suitability curves with IFIM PHABSIM studies to provide a firm scientific basis for identifying detrimental impacts and determining in-river flow requirements for the upper Avon and tributaries.	the Agency		o						PHABSIM data collected from Wylde in 1994/5 (cost £7.5K). The value and need for further IFIM work will be assessed in the Wylde groundwater investigations.	PHABSIM data collected in 1994/95 and confirmed to be used in connection with NEW action 5.2c. <i>Action completed, no further reporting in future plans required.</i>
5.2b. Continue investigations regarding the definition of environmental flow needs for the lower Avon.	the Agency		→	→	→				The further definition of environmental flow needs for the Avon is awaiting guidance from National R&D on the suitability of the river as a pilot study for a minimum acceptable flow setting.	As previously.
NEW 5.2c. Utilise PHABSIM data (see action 5.2a) in an IFIM study of various sites on the River Wylde system to assess physical habitat availability for Brown Trout.	the Agency	£60K			o	o				Contract let for a start in August 1996.
NEW 5.2d. Undertake a review of the River Wylde fishery production and angling conditions to assist interpretation of the Phase II study hydrological findings and the outcome of NEW 5.2c.	the Agency WWS	£15K			o	o				Repeat fish population survey Sept/Oct 1996. Questionnaire survey of fisheries by consultant Aug/Sept 1996. Spawning survey planned for 1996/97.
<b>Managing abstraction in the catchment</b>										
5.3a. Develop groundwater management strategy in areas where resources are already fully or significantly allocated.	the Agency			→					No specific action has been identified.	Future applications for licences to abstract groundwater will be closely scrutinised with regard to their scale, consumptive use and hydrological context and not normally permitted where an uncertainty remains about irreversible adverse environmental impact. This is in line with the Water Resources Development Strategy - 'Tomorrow's Water' (see Action 5.1b) and will be carried over into routine work. <i>Hence there is no requirement for reporting on this specific action in future plans.</i>
5.3b. Resolve concern over sustainability of existing environmental needs and other legal uses.	the Agency			→					No specific action has been identified.	<i>It is considered appropriate to now withdraw this action as we feel the true actions for its achievement are contained elsewhere eg 5.3d, 5.2b, 5.1f.</i>

Issues & Actions	By	Cost	94	95	96	97	98	Future	Progress Year One	Progress Year Two
<b>Managing abstraction in the catchment (continued)</b>										
5.3c. Plan resource management arrangements for droughts.	the Agency			→					No specific action has been identified.	The Agency now has powers to determine Drought Permit applications and has made the necessary arrangements for the execution of these powers. Where applications for drought measures present a major conflict between demands for water use and the conservation of the environment the Agency will reserve the right to refer the matter for determination by the Secretary of State. <i>We now feel this particular action can be withdrawn as a result of the powers the Agency has.</i>
5.3d. Continue water abstraction licence enforcement in Avon catchment as per national policy.	the Agency		→	→					Ongoing work as per National policy.	Ongoing work as per National policy. <i>This work is now regarded as routine commitment. No further reporting in future plans required.</i>
5.3e. Project identifying means by which water abstraction licence of entitlement holders can monitor their abstraction has been completed and will be implemented by the end of the calendar year. The cost of and responsibility for installation and maintenance of measuring devices is with the licence holder.	the Agency Licence holders		o						Implementation delayed at fish farms of greater than 10MI/d pending discussions at National level with British Trout Farmers Association regarding continuous flow monitoring. Area staff are collecting information to send via Region to the National discussion.	Implementation still outstanding at fish farms greater than 10MI/d. Regional advice is awaited on interpretation of policy regarding continuous flow measurement.
<b>Flow monitoring</b>										
5.4a. Completion of Stockton Park gauging station on the Wylde.	the Agency	£155K	o						Commissioned in September 1994 at a construction cost of £170K. Checks indicate very good calibration.	Gauge is operating within expected range. <i>Action completed, no further reporting in future plans required.</i>
5.4b. Feasibility study for a new gauging point on the River Ebbles.		£6K	o						Study completed August 1994 at a cost of £7.6K. Recommendation for an electromagnetic gauging station at Nunton Bridge.	See action 5.4(c). <i>Action completed, no further reporting in future plans required.</i>
5.4c. Design and construct Ebbles Gauging Station if resources allow.	the Agency	£200K		?					Ecological/historical study commissioned June 1995 to address conservation concerns. Final design to be completed January 1996. Construction anticipated May-September 1996 to take advantage of summer conditions and fisheries approved window of opportunity.	Gauge design required modification to accommodate conservation concerns. Planning permission granted in May. Construction work began at the end of July, completion expected November 1996.

Issues & Actions	By	Cost	94	95	96	97	98	Future	Progress Year One	Progress Year Two
<b>Assess the extent and impact of siltation and compaction of salmonid spawning gravels</b>										
6a. Report produced for NRA on salmon spawning gravels in the Wessex region.	the Agency	£20K	o						Completed 1994.	Action completed, no further reporting in future plans required.
6b. Gravel improvement project.	the Agency	£5K	→	→	→				A further £7.2K was spent on gravel improvement on the Avon in 1994.	Work progressed as planned in 1995, further work programmed for 1996.
6c. Gravel improvement evaluation.	the Agency GCT		→	→					A £5K evaluation has been carried out for the NRA by GCT in 1994/5.	Evaluation completed in 1995, suggested some benefit in cleaning gravel, although the process may require further investigation. No further reporting in future plans required.
6d. Assess potential of buffer zones.	the Agency		→	→					See Action 16.	See Action 16.
<b>Decline in catches of large spring salmon (issue revised in 1995; to protect all salmon stocks)</b>										
7a. Rod fishing restricted to fly only before May 15th.	the Agency		→	→					Implemented and being evaluated.	See Action 7d.
7b. Angling season shortened by 1 month (September).	the Agency		→	→					Implemented and being evaluated.	See Action 7d. Action completed, no further reporting in future plans required.
7c. Netting season restricted to 15 April - 31 July.	the Agency		→	→					Implemented and being evaluated.	See Action 7d. Action completed, no further reporting in future plans required.
7d. Review the effect of the above byelaw changes.	the Agency				o					Byelaw review currently being undertaken.
7e. NRA has produced R&D note 202 "Genetic aspects of spring run salmon".	the Agency		o						Completed in 1994.	Action completed, no further reporting in future plans required.
7f. Ongoing work within national programme to increase spring salmon stocks.	the Agency		→	→						National R&D is continuing.
7g. Install fish counter at Knapp Mill to improve data on status of spring salmon stocks and allow improved management.	the Agency	£9.5K	o						Counters installed in fish passes during 1994 and £6K is being spent in 1995 on verification.	Initial verification completed. Side viewing cameras to improve species identification currently being installed. (Side viewing cameras fitted and working on one counter.)
7h. Release of fish from nets and the promotion of angler catch and release.	the Agency	£8K	o						Has started this year.	Salmon purchased and released successfully in 1995 and 1996. 41 released in 1995 and 26 in 1996. Catch and release promotion carried out in 1995 and 1996. 13% of rod caught salmon released in 1995 and 21% in 1996.
7i. Extra enforcement using Fishery Assistants.	the Agency	£0.5K		→					Planned for late 1995.	One assistant appointed in 1995.

Issues & Actions	By	Cost	94	95	96	97	98	Future	Progress Year One	Progress Year Two
<b>Decline in catches of large spring salmon (issue revised in 1995; to protect all salmon stocks) (continued)</b>										
7j. Avon Migration Study carried out in 1994/5.	the Agency	£7.5K	o						Several recommendations implemented, and this will form the basis for continued improvements over the next few years. Action 8b will be extended to cover the success of wild breeding by salmon in the Upper Avon, and funding is being sought for further R&D on this aspect.	Prioritised recommendations were made. All high priority recommendations now implemented.
7k. Artificial propagation and stocking of salmon.	WSA the Agency		→	→					7,000 parr have been raised by WSA. NRA will provide microtagging and assess effectiveness.	Project ongoing. Poor results in 1995 and 1996. National R&D project assisting. 9,000 parr (in total) have been released by WSA, all microtagged by the Agency. No reported returns to date.
NEW 7l. Undertake a genetic examination of Avon salmon. This will allow a comparison with Frome & Piddle stocks and provide a baseline against which any future change can be measured.	the Agency	£2.7K			o					Sample collected in summer 1996, currently with MAFF awaiting analysis. Results expected late 1996.
<b>Decline of the brown trout fishery in the upper catchment</b>										
8a. Survey of upper Avon trout populations & invertebrates.	the Agency	£6K	o						The routine GQA sites on the Upper Avon will be sampled in 1995 to form the basis of the biological survey. Additional sampling, if required, and interpretation will be completed by December 1996. The trout population survey was carried out in 1994.	GQA biological work completed and a national report is now being produced. Additional biological sampling being carried out during 1996, and a report produced by the end of the year.
8b. Investigation of wild trout breeding success.	GCT	£75K	o	o	o	o			The GCT project will take place from August 1995 - August 1998. See also Action 7j.	Project is underway.
8c. Gravel improvement work in co-operation with fishery keepers.	the Agency Owners	£2K	→	→					The gravel cleaning equipment was made available for loan to keepers in the upper catchment in 1994, and this practice will continue.	Satisfactory uptake.
8d. Flow recommendations for tributaries using brown trout suitability curves.									See Action 5.2a.	PHABSIM work began in 1994 and will continue into 1997 when flow recommendations will be made. See also Actions 5.2a and NEW 5.2c.
8c. Assess habitat benefits from buffer zones.	the Agency		→	→					See Action 16.	Landcare project addresses several chalk stream malaise issues, began 1996 See also Actions 3b and 16.

Issues & Actions	By	Cost	94	95	96	97	98	Future	Progress Year One	Progress Year Two
Decline of the brown trout fishery in the upper catchment (continued)										
NEW 8f. Stocking of rainbow trout.	the Agency				→					We are attempting to stop this practice by persuasion.
Decline in coarse fisheries										
9a. Investigate anomalies in length distribution of Avon coarse fish identified in 1991 NRA survey.	the Agency								Ongoing attention in the Migration Study. Further survey planned in 1996.	Awaiting Action 9c.
9b. Investigate possibility of improved migration conditions at obstructions.	the Agency	£10K	o	o	o				The Avon Migration Study was carried out in 1994/5 (cost £7.5K) and will form the basis for an ongoing programme of improvements.	Migration improvements implemented 1995 and 1996. To some extent further improvements will depend on the outcome of action 9c.
9c. Further stock survey.	the Agency	£25K		o					Rescheduled for 1996.	Survey now planned for 1997.
9d. Improve coarse fish habitat by water level management.									See Action 10.	See Action 10.
NEW 9e. Concern over impacts of fixed eel traps on other species.	the Agency				→					We will monitor trapping operations. Audit carried out in Autumn 1995. Further investigation planned for Autumn 1996.
Water level management, current land use and operational activities are perceived to be compromising the wetland and aquatic wildlife interest of the valley										
10a. Develop a sustainable water level management strategy for the river and floodplain to provide a basis for future management, assist with the implementation of ESA schemes and establish demonstration ESA Tier 2 sites.	the Agency MAFF EN Owners	£70K	o	o	o	o			Phase 1 Scoping Study complete, which identified landuse parameters, ecological parameters, landowners, structures and floodplain. Trial areas identified below Salisbury. 613ha in ESA agreements in 1994, and anticipated 846ha by end of 1995.	An anticipated 900ha of land, in 53 agreements, will be entered into the ESA in 1996, representing about 23% of the target area. The review of the ESA will be done in 1997. Water level management issues are incorporated in action 10c.
10b. Review existing operational and maintenance plan for Avon Valley SSSI in light of strategy findings.	the Agency MAFF EN				o	o				See NEW action 10f. <i>Action transferred, no further reporting in future plans required.</i>
10c. Continue to use Weedcutting Liaison Group to resolve short-term weedcutting decisions. Review activity of this group in the light of strategy.	the Agency	£10K	→	→	o	o			Ongoing.	Review and audit of existing weedcutting practices, and work of liaison group. Weed cutting review for area planned for the winter of 1996/97.
10d. Continue with development of 'ONDA' river management model to aid objective development of strategy.	the Agency		→	→					Phase 2, which involves developing a computer model to assess the impact of river management options on river and floodplain water levels will be progressed.	ONDA model completed for trial areas.

Issues & Actions	By	Cost	94	95	96	97	98	Future	Progress Year One	Progress Year Two
Water level management, current land use and operational activities are perceived to be compromising the wetland and aquatic wildlife interest of the valley (continued)										
10e. Prepare Water Level Management Plan to MAFF national guidelines.	the Agency MAFF EN Owners			o	o	o			£12K was spent in 1994/95 collating land use, structural and constraint data on large scale maps. £10K has been made available in 1995/96 and an interim WLMP should be prepared by the end of the year. We intend to clarify the aims of this project in step with the new requirement to prepare a WLMP and choose the right approach.	Timescale extended. An interim management statement (internal use only) has been prepared. Full plans will be produced for each of the three trial areas by March 1997 (principles to apply to catchment between Salisbury and Christchurch will also be stated). A public consultation exercise on the aims and strategy will be undertaken.
NEW 10f. Produce a conservation strategy and consenting protocol for the river pSSSI.	the Agency EN Land-owners				o	o				Significant lengths of the Hampshire Avon and certain tributaries are being added to the existing SSSI. Resources required to produce the consenting protocol and conservation strategy are being assessed. The review of the existing operational and maintenance plan will be incorporated in the strategy.
The Agency programme of flood defence improvements to protect people and property										
11a. Tidal defence scheme on the lower Avon at Christchurch.	the Agency MAFF	£1.3M	o	o	o	o			Stage 1 completed. Stage 2 being designed for construction during 1995/96.	Construction delayed due to costs, now planned 1996/97.
11b. Flood alleviation scheme on the lower Avon at Downton.	the Agency MAFF	£200K					o		Pre-feasibility study has been carried out and is included in medium-term programme.	As previously.
11c. Tidal defences at Christchurch Harbour.	the Agency MAFF	£750K						o	Delayed until agreement reached with Christchurch BC on their contribution.	Scheme not viable and deferred for the present.
11d. Flood alleviation scheme on the lower Avon at Ringwood.	the Agency MAFF	£25K						o		Pre-feasibility study has been carried out and scheme is included in the medium term programme.
11e. Due to recent flooding, a capital flood alleviation scheme is being evaluated for Tisbury.	the Agency		→	→					Pre-feasibility study indicates that a justified scheme is unlikely.	Pre-feasibility study indicated that a scheme could not be justified and one will not now be promoted. <i>No further reporting in future plans required.</i>
11f. Annual review of capital programme.	the Agency		→	→	→				Capital programme reviewed and submitted to Committee in June 1995.	Capital programme reviewed and submitted to Committee in June 1996.
11g. Implementation of Flood Defence Standards of Service Management System including flood warning.	the Agency			o	o	o	-o	o	Some reductions in maintenance effort on old IDB channels where SoS indicates that present service is above target.	SoS being actively applied.

Issues & Actions	By	Cost	94	95	96	97	98	Future	Progress Year One	Progress Year Two
<b>The Agency programme of flood defence improvements to protect people and property (continued)</b>										
NEW 11h. A flood alleviation scheme is currently being evaluated for Wylde.	the Agency	£50K?			o	o				Pre-feasibility study is currently underway.
NEW 11i. A flood alleviation scheme is currently being evaluated for Norton Bavant.	the Agency	£30K?			o	o				Pre-feasibility study is currently underway.
NEW 11j. Following sea defence survey areas in Christchurch have been identified at risk from flooding.	the Agency				o	o				Pre-feasibility study is currently underway.
<b>Impact of large trout farms</b>										
12a. Seek to work with the fish farms to encourage support for the objectives of the Agency.	the Agency								Screening and channel works have been carried out at 3 farms in 1995/6 to assist unhindered wild fish movements. See also Action 9b.	Recommendations of migration report implemented with agreement and ongoing assistance of fish farmers. See also Action 9b.
12b. Monitor compliance with discharge consent conditions.	the Agency		→	→					Where a volumetric limit exists on discharge consent, compliance is being addressed in conjunction with abstraction licence enforcement i.e. one single point of monitoring is recommended wherever possible. See also Action 5.3e.	Ongoing; monitoring does indicate an improvement in discharges from large trout farms. BOD and ammonia failures are rare. DO failures are marginal and are largely dependent on outside influences eg upstream quality, presence of algae. <i>This work is now regarded as routine. No further reporting in future plans required.</i>
12c. Monitor compliance with abstraction licence conditions.	the Agency		→	→					As above.	As above. <i>This work is now regarded as routine. No further reporting in future plans required.</i>
12d. Assess fisheries issues as part of other studies.	the Agency								See Action 9b.	Action incorporated in 9b. <i>No further reporting in future plans required.</i>
<b>The Britford flow apportioning initiative</b>										
13a. Provide structural improvements and security measures at Drawing Hatches, Wire Hatches and Sluice House and construct fixed bypass weir.	the Agency	£23K	o	o	o				Drawing Hatches work has been carried out by Whittle Estate.	Investigation into automating controls completed. Salisbury study now in final draft stage (see also Action 14d).
13b. Repair Drawing Hatches	Owners	?	o	o					As above.	As above.
13c. Monitor the effect of agreed hatch settings from June to November 1994 on the operation and use of the Britford system.	the Agency		o						Monitoring is taking place via installed telemetry.	Monitoring is taking place via installed telemetry.
13d. Installation of telemetry to allow the remote monitoring and operation of key parts of the system.	the Agency	£22K	o	o	o					Initial investigation has looked at costs and possible systems.

Issues & Actions	By	Cost	94	95	96	97	98	Future	Progress Year One	Progress Year Two
<b>The Britford flow apportioning initiative (continued)</b>										
13e. Review the operation of the Britford system.	the Agency	£0.5K	o	o					New operational rules are under consideration.	New rules in use.
13f. Recognise and support the conservation value of Petersfinger lakes.	the Agency		→	→					A Report was produced and sent to the fishing club in 1994 summarising the recommendations for conservation and enhancement.	Action completed, no further reporting in future plans required.
13g. Publicise "Weir, Hatches, and Silt policy" using Britford as a good cooperative venture.	the Agency	£0.5K	o	o					An on-site press conference has been held.	Action completed, no further reporting in future plans required.
13h. Agreement reached to enable the two water meadow tenants to share water; determine water meadow flow needs and check for leaks.	the Agency Owners EN		o	o	o	o			An assessment of the water requirements for the SSSI is still outstanding; investigations in 1994 were inconclusive due to the lack of flooding of the meadow. Should be repeated in 1995 depending on landowner contact and requirement to flood. Additional work is also agreed to determine flow needs during the summer and autumn. See also Action 13c.	There has been no progress on assessments for water requirements within the SSSI. It is hoped that water levels and flooding needs coincide during winter 1996/spring 1997 to enable the assessment to be carried out.
<b>Future development will impact upon the water environment</b>										
14a. Seek the inclusion of policies to protect and enhance the water environment in relevant Structure Plans.	the Agency LPA		→	→					Has been done and is ongoing.	This work is now regarded as routine, no further reporting in future plans required.
14b. Seek the inclusion of policies to protect and enhance the water environment in relevant District Wide Local Plans.	the Agency LPA		o	o	o				Has been done and is ongoing.	This work is now regarded as routine, no further reporting in future plans required.
14c. Encourage cross-boundary consistency between planning authorities within the catchment.	the Agency		→	→					Has been done and is ongoing.	Ongoing
14d. Survey all main river floodplains to provide planning authorities with maps outlining indicative 1 in 100 year flood risk areas to assist with development land allocation.	the Agency		→	→	→	→	→		A pilot study has commenced in some coastal streams in the Area. Depending on the outcome of this, and on other considerations, it is currently proposed that we produce indicative floodplain maps for main rivers and some ordinary watercourses, and definitive (100 year) floodplain maps where development is likely. There would be a 4/5 year timescale for Area-wide production.	Pilot study finished. Indicative floodplain mapping for the remainder of the area will be completed April 1997 and further work planned for subsequent years. A comprehensive draft study of flood risk in the Salisbury area has been completed.



Issues & Actions	By	Cost	94	95	96	97	98	Future	Progress Year One	Progress Year Two
<b>Investigation of scope for a balanced development of public access on river Avon</b>										
15a. Collaborative project to investigate scope for increased access as an appropriate component of balanced river valley use.	the Agency ?	£20K			o	o			Joint project with Local Authorities not achieved in 1994/5. Initiative to continue in 1995/6, though no NRA funds have been allocated yet.	An initial scoping brief has been circulated to potential funding partners, which has highlighted interest in the project but no funding. Report to be produced 1996/1997 proposing future options.
<b>The potential for buffer zones to improve river corridor habitats and contribute to an improvement in water quality should be assessed</b>										
16a. Upper Avon, Nadder and Wylde catchments have been identified as a pilot scheme for a MAFF Water Fringe Option.	MAFF Owners the Agency EN	?	→	→	→				35 applications received resulting in 33 management agreements covering approximately 14% of the potentially eligible bankside land.	After the second year of the pilot scheme 58 agreements have been concluded covering a total of 19% of the target area. A further 20 applications have been received in 1996. Uptake on this pilot area has been the highest of all the Habitat Schemes.
16b. Collaborative project to maximise the benefits of the Water Fringe Option by targeted promotion of the scheme and demonstration of techniques.	the Agency	£12.5K	o						Project completed. A set of leaflets has been produced, 3 site visits arranged, and the draft of the project report is being circulated for comment. Stage 2, costing an additional £2K, has been let to WWT to complete the promotion of the project and oversee the demonstration visits.	Action completed, no further reporting in future plans required.
16c. National R&D Project to develop land management techniques including the use of buffer zones.	the Agency	£200K	o	o	o	o			Project specification currently being drawn up.	The project is in three phases; phase 1 is complete and phase 2 is currently underway.
16d. National workshop to provide guidance on buffer zone management.	the Agency	£2K	o						One NRA National workshop has been held, and those organised by other organisations have been attended.	Another international workshop supported by the Agency will be held during autumn 1996.
<b>Potential sea-level rise and the impact on rivers as a result of global warming</b>										
17a. Allow for a forecast 5mm per year sea-level rise in all sea defence schemes until the year 2030, and 7.5mm per year thereafter.	the Agency		→	→					Sea-level rise allowance has been included in all new sea defence capital projects.	Sea-level rise allowance has been included in all new sea defence capital projects. Now regarded as routine. No further reporting in future plans required.
17b. The Agency will produce detailed flood risk maps.									See Action 14d.	Incorporated in Action 14d. No further reporting in future plans required.
<b>Habitat enhancement in the upper river channel</b>										
18a. Collaborative project to promote MAFF Water Fringe schemes.									See Action 16.	Incorporated in Action 16a. No further reporting in future plans required.

Issues & Actions	By	Cost	94	95	96	97	98	Future	Progress Year One	Progress Year Two
<b>Impact of swans on the water environment</b>										
19.1. Work with all interest groups to develop and implement strategies to reduce impact.	the Agency EN MAFF Owners	£2K	o	o	o				A field study of the impact of swans on trout fisheries was carried out in 1994 (cost £4K) in liaison with MAFF and owners. A joint project will take place in 1995/6 between NRA (£5K) and MAFF (£35K).	Joint MAFF/the Agency R&D project was undertaken during 1995 and 1996. This study is likely to continue.
<b>Cormorant predation of fish</b>										
19.2a. The Agency will support licensed killing only when serious damage to fisheries by cormorants has been established and alternative non-destructive methods of preventing damage have been tried.									See Action 19.2b.	See Action 19.2b.
19.2b. The Agency will cooperate with the licensing authority to progress further research into this issue, and will work positively with owners and anglers to establish the full facts in each situation.	the Agency MAFF Owners		→	o	o	o			A £1M National R&D study in collaboration with MAFF and DoE has been let. The Hampshire Avon has been nominated as a potential river for study.	R&D study progressing, three sites on the Hampshire Avon chosen for study.
<b>NEW Biodiversity targets for the catchment</b>										
20a. Encourage and cooperate with the setting of targets for key wetland habitats and species based on the recommendation of the UK Biodiversity Action Plan.	the Agency EN HWT RSPB Others				→	→	→			Collaborative project in 1996/97 to audit current information on wildlife reserve of valley (Salisbury to Christchurch), to highlight future monitoring needs and prepare targets (1997/98).
20b. Prepare a strategy for native crayfish, one of the species the Agency has a coordinating role for.	the Agency EN HWT MAFF Others				o	o				1996 survey located only two populations of native crayfish. The strategy will examine scope for publicity, survey, research into reintroductions and advice.
20c. Prepare a strategy for otters, one of the species the Agency has a coordinating role for.	the Agency EN HWT Others									Analysis of eels for contaminants, from the Hampshire Avon catchment should be complete by November 1996. This should indicate whether otters' major food source is limiting their spread.

Issues & Actions	By	Cost	94	95	96	97	98	Future	Progress Year One	Progress Year Two
<b>NEW Biodiversity targets for the catchment (continued)</b>										
20d. Collaborative study of breeding waders.	the Agency EN RSPB				o					The Agency contributed £2K towards collaborative study, looking at Breeding Waders. Preliminary report indicates significant range contraction, species having gone from the valley above Fordingbridge, and a 38% decline in numbers since 1990. Decline in suitable habitat, though inappropriate ditch maintenance and lowered water levels, seen as critical. Final report end of 1996.
<b>NEW Need to further identify the archaeological resource within the catchment</b>										
21. Need for a scoping project to investigate opportunities for improving knowledge on archaeological interest, in particular water meadows, within river valleys.	the Agency LPAs				o	o	o			Subject to funding, collaborative project.

## 6 APPENDICES

### 6.1 Integrated Pollution Control

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

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

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

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

### 6.2 Air Quality

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

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

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

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

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

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

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

In due course, air quality standards may be prescribed in regulations made by the Government and obligations placed on local authorities regarding the establishment and operation of local air quality

management areas. Local authorities will have to carry out periodic reviews of air quality in their areas. Where standards are not being met or are not likely to be met an air quality management area should be declared, known as a *Designated Area*, and an action plan produced to improve air quality.

### 6.3 Radioactive Substances

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

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

### 6.4 Waste Management

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

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

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

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

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

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

Certain activities are now afforded exemptions from waste management licencing by the regulations. In general they are activities with less potential for pollution, and certain waste storage and recycling processes including the spreading of certain wastes on agricultural land for benefit. 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 Licencing Regulations (1994) under the Environmental Protection Act (1990) has changed this situation. Licences can now control the monitoring and aftercare of closed sites. Licences cannot be surrendered until the Agency is satisfied that the site does not represent a risk to the environment.

Planning for waste management is undertaken by the :

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

## 6.5 River Quality Objectives

We manage water quality by setting River Quality Objectives (RQOs which are intended to protect current water quality and future use, and we use them as a basis for setting consents for new discharges and planning future water quality improvements. We have proposed our RQOs using a classification scheme known as River Ecosystem (RE) which was introduced by the National Rivers Authority, following public consultation, in 1994. It replaces a former scheme introduced by the Water Authorities in the late 1970s and used by the NRA until 1994.

The RQOs we set must be achievable and sustainable; we must be able to identify what needs to be done to meet the RQO, 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 can also set a visionary or Long Term RQO; we will use this visionary target as a basis for setting consents for new discharges. This will ensure that future developments will not hinder our efforts to improve water quality.

RQO RE Use Class	DO % sat 10%ile	BOD (ATU) mg/l 90%ile	Total Ammonia mgN/l 90%ile	Un-ionised Ammonia mgN/l 95%ile	pH 5%ile & 95%ile	Hardness mg/l CaCO <sub>3</sub>	Dissolved Copper mg/l 95%ile	Total Zinc mg/l 95%ile	Class Description
1	80	2.5	0.25	0.021	6.0 - 9.0	≤10 >10 and ≤50 >50 and ≤100 >100	5 22 40 112	30 200 300 500	Water of very good quality suitable for all fish species
2	70	4.0	0.6	0.021	6.0 - 9.0	≤10 >10 and ≤50 >50 and ≤100 >100	5 22 40 112	30 200 300 500	Water of good quality suitable for all fish species
3	60	6.0	1.3	0.021	6.0 - 9.0	≤10 >10 and ≤50 >50 and ≤100 >100	5 22 40 112	300 700 1,000 2,000	Water of fair quality suitable for high class coarse fish populations
4	50	8.0	2.5		6.0 - 9.0	≤10 >10 and ≤50 >50 and ≤100 >100	5 22 40 112	300 700 1,000 2,000	Water of fair quality suitable for coarse fish populations
5	20	15.0	9.0						Water of poor quality which is likely to limit coarse fish populations

## 6.6 Glossary

AMP2	Second Asset Management Plan
BATNEEC	Best Available Technology Not Entailing Excessive Cost
BC	Borough Council
BOD	Biological Oxygen Demand
BPEO	Best Practicable Environmental Option
BWHW	Bournemouth and West Hampshire Water Company
CMP	Catchment Management Plan
DO	Dissolved Oxygen
DoE	Department of the Environment
EC	European Community
EN	English Nature
ESA	Environmentally Sensitive Area
FAS	Flood Alleviation Scheme
GCT	Game Conservancy Trust
GQA	General Quality Assessment
ha	hectare
HMIP	Her Majesty's Inspectorate of Pollution
HSE	Health & Safety Executive
HMSO	Her Majesty's Stationery Office
HWT	Hampshire Wildlife Trust
IDB	Internal Drainage Board
IFIM	Instream Flow Incremental Methodology
IPC	Integrated Pollution Control
LAAPC	Local Authority Air Pollution Control
LEAP	Local Environment Agency Plan
LPA	Local Planning Authority
mAOD	metres Above Ordnance Datum
MAFF	Ministry of Agriculture, Fisheries and Food
MoD	Ministry of Defence
NRA	National Rivers Authority
OFWAT	Office of Water Services
PHABSIM	Physical Habitat Simulation
pSSSI	Proposed Site of Special Scientific Interest
R&D	Research and Development
RAS	Radioactive Substances
RE	River Ecosystem
RQOs	River Quality Objectives
RSPB	Royal Society for the Protection of Birds
SoS	Standards of Service
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
STW	Sewage Treatment Works
UV	Ultra Violet
WLMP	Water Level Management Plan
WRA	Waste Regulation Authority
WRC	Water Research Council
WSA	Wessex Salmon Association
WWS	Wessex Water Services Ltd
WWT	Wiltshire Wildlife Trust

## 6.7 Units

cumecs (m <sup>3</sup> /s)	cubic metres per second
m <sup>3</sup> /d	cubic metres per day
l/s	litres per second
MI/d	megalitres per day
MI/y	megalitres per year
Mgd	millions of gallons per day
mg/l	milligrams per litre
µg/l	micrograms per litre
ng/l	nanograms per litre
1 cubic metre	= 1,000 litres
1 cubic metre	= 220 gallons
1 gallon	= 4.54 litres
1 megalitre	= 1,000,000 litres
1 hectare	= 2.471 acres

## 6.8 References

- Environment Act 1995, HMSO
- Environmental Protection Act 1990, HMSO
- Hampshire Avon Catchment Management Plan Consultation Report, NRA Wessex Region, October 1992
- Hampshire Avon Catchment Management Plan Final Report, NRA South Western Region, June 1994, SW-7/94-1k-E-AKBN
- Hampshire Avon Catchment Management Plan First Annual Review, NRA South Western Region, October 1995
- Radioactive Substances Act 1993, HMSO
- Tomorrow's Water; Water Resources Development Strategy, NRA South Western Region, April 1995, SW-4/95-1k-B-ANOQ
- Waste Management Licencing Regulations 1994, HMSO
- Water Industry Act 1991, HMSO



## 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.

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