local environment agency plan

RIVER PARRETT

ACTION PLAN

DECEMBER 1997

ENVIRONMENT AGENCY

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Foreword

This is the first of the new Local Environment Agency Action Plans produced in North Wessex and represents a significant step forward in tackling environmental issues. It has been clear for many years that the problems of land, air and water, particularly in the realm of pollution control, cannot be adequately addressed individually. They are interdependent, each affecting the others. The creation of the Environment Agency with responsibilities in all three media provided a major opportunity to have an holistic approach which is now reflected in this Action Plan.

The Plan sets out the environmental problems of the area in a way which has not been done before, and addresses the issues which have been raised both internally and as a result of public consultation. It is, I believe, vital reading for everyone concerned with the environmental future of North Wessex.

The catchment of the River Parrett and its tributaries, the rivers Isle, Yeo, and Cary encompasses a varied and complex environment, and includes a major part of the Somerset Levels and Moors. Here we must strike a balance between the often conflicting interests of all those who live and work in or have an interest in this internationally important area for conservation.

I am confident that by working in partnership with local authorities, environmental and interest groups, as well as the public, we can progress towards a better environment in this area.

CHRIS BIRKS
AREA MANAGER (NORTH WESSEX)

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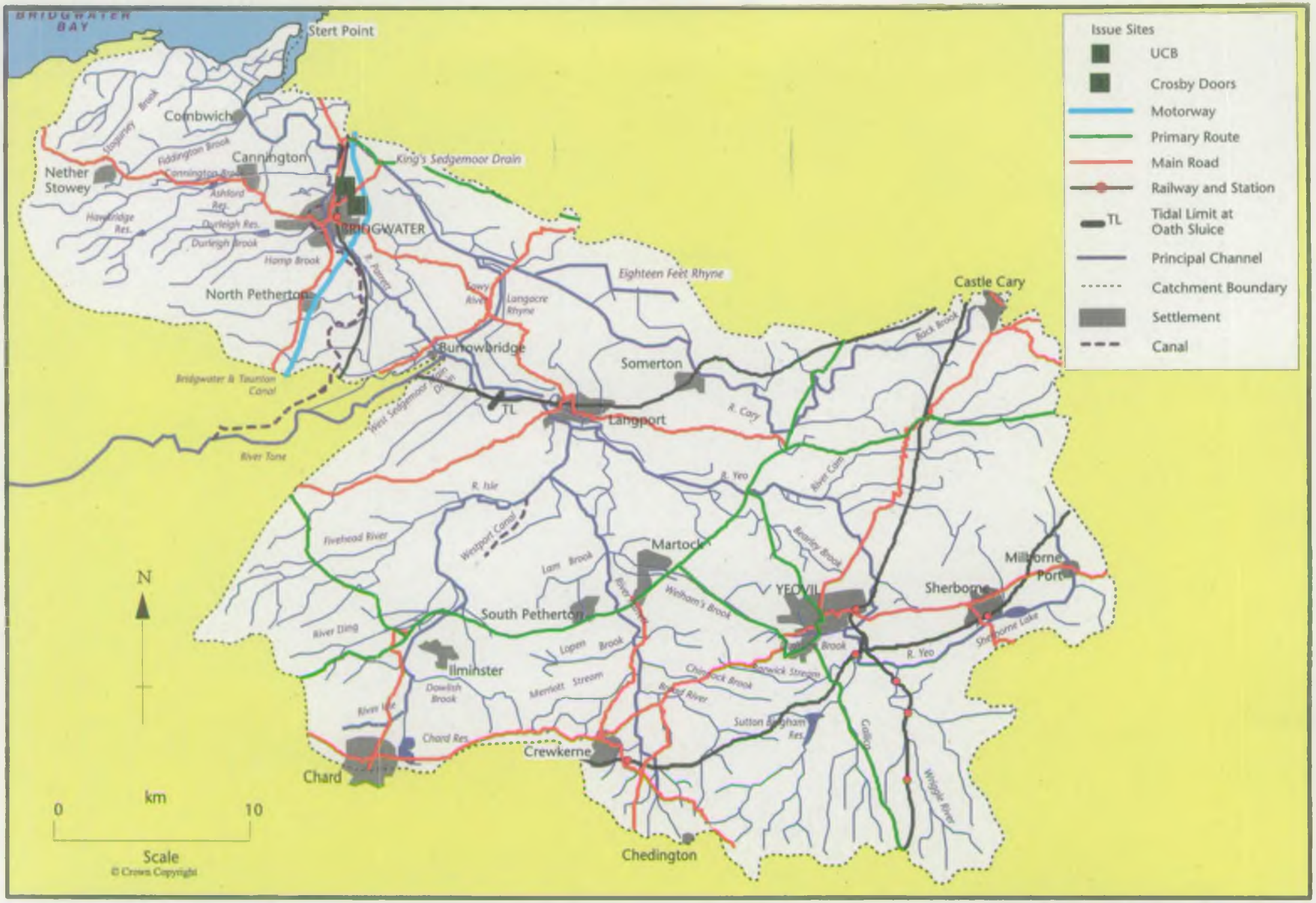
Note: This is not a legally or scientifically binding document.

Map 1 - The Parrett Catchment (Including Point-Located Issue Sites)



map 1

Fold out for Map 1
The Parrett Catchment (Including Point-located Issue Sites)

Contents

1. Our Mission and Aims 1

2. Introduction 2
- 2.1 Public Consultation 2
- 2.2 Future Reviews 2
- 2.3 LEAPs and Development Plans 2
- 2.4 The River Parrett Catchment 3

3. Activity Tables 4
- 3.1 Pollution Control 5
- 3.1.1 River Quality Objectives and EC Directives 5
- 3.1.2 Somerton Pollution Incident Update 17
- 3.1.3 Waste Management 17
- 3.1.4 Integrated Pollution Control 18
- 3.1.5 Air Quality 19
- 3.1.6 Radioactive Substances 20
- 3.2 Water Resources 20
- 3.3 Wildlife, Landscape, Flood Defence and Recreation 22
- 3.3.1 Wildlife 22
- 3.3.2 Eel and Elver Fishery 25
- 3.3.3 Landscape 26
- 3.3.4 Flood Defence 27
- 3.3.5 Recreation 28
- 3.4 Development Pressure 29

4. Appendices 30
- 4.1 Appendix 1 River Parrett Catchment Steering Group 30
- 4.2 Appendix 2 Organizations Responding to the Public Consultation 31
- 4.3 Appendix 3 Guide To Consultation Report And Action Plan Issues 31
- 4.4 Appendix 4 List of Numbered River Stretches 32

Issues 6

Issue 1 Impact of Farming Activities on Water Quality 7
Issue 2 Impact of Sewage Treatment Works (STWs) on Water Quality 9
Issue 3 Unknown Causes of Poor Water Quality 10
Issue 4 Impact of Industrial Discharges on Water Quality 12
Issue 5 Impact of Penning, Low Flow, Nutrient Enrichment, Algal and Weed Growth 13
Issue 6 Inappropriate Location of Monitoring Point 15
Issue 7 The Need to Review Discharge Consents (Habitats Directive) 16
Issue 8 The Need for Accurate Data on Waste Arisings 18
Issue 9 The Need for Waste Minimization and Improved Waste Management 18
Issue 10 Emissions to Air from UCB and Crosby Ltd 19
Issue 11 The Need to Improve Water Resource Management in the Catchment 22
Issue 12 The Need to Maintain and Enhance Biodiversity 23
Issue 13 Eel and Elver Fishery 26
Issue 14 The Need to Maintain and Enhance River Corridor Landscape 26
Issue 15 The Need for Improved Flood Defence Practices in the Catchment 27
Issue 16 The Need to Take Account of Recreation in Agency Work 28
Issue 17 Development Pressure 30

Maps

Map 1	The Parrett Catchment (Including Point-Located Issue Sites)	Fold out to front
Map 2	Compliance with River Quality Objectives (River Ecosystem Classification 1996)	Fold out to back

1. Our Mission and Aims

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 openly 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 minimization, reuse and recycling, and 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, where appropriate.
- 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.

2. Introduction

The Environment Agency is one of the largest environmental regulators in the world. It provides a comprehensive approach to the protection and management of the environment by combining the regulation of waste to land, water, and industrial releases to air. Its creation on 1 April 1996 was a major and positive step, merging the expertise of the National Rivers Authority (NRA), Her Majesty's Inspectorate of Pollution (HMIP), the Waste Regulation Authorities (WRA) and several smaller units from the Department of the Environment.

We hope that you will find this plan useful whether you are involved in a local authority, an environmental organization, in industry, or a recreation or other relevant body. It is intended to inform you of our plans and to be a basis for further ideas and initiatives to ensure that the work of the Environment Agency progresses towards more integrated environmental management and regulation.

2.1 Public Consultation

In March 1997 the Agency published the River Parrett Local Environment Agency Plan (LEAP) Consultation Report which promised an Action Plan for the catchment following a period of Public Consultation. The Agency consulted approximately 480 organizations and individuals directly about the issues which are outlined in this Action Plan and received 42 formal responses. These responses are summarized in our Report on Public Consultation available on request from this office. A list of organizations responding to the Consultation Report can be found in Appendix 2.

This Action Plan outlines how the Environment Agency and other organizations plan to tackle issues which affect the environment in the River Parrett Catchment. Issues are grouped and summarized in Activity Tables.

We have set up a LEAP Steering Group to help us produce this Action Plan. The membership of individuals and organizations reflects as many interests in the catchment as possible. A list of members and the interest they represent can be found in Appendix 1.

2.2 Future Reviews

We will report progress each year on carrying out our planned actions by publishing an Annual Review Document. This will also be an opportunity to add new issues and actions as they may arise. The Environment Agency is building on the NRA's Catchment Plans to cover its wider range of environmental work. These new plans are called Local Environment Agency Plans (LEAPs) and it is the intention to have such LEAPs for the whole of England and Wales by the end of the millennium. By that date, the River Parrett LEAP will be revised and published as a joint LEAP Action Plan with the River Tone, following public consultation on a Draft Local Action Plan (DLAP).

2.3 LEAPs and Development Plans

Although we can control some of the things which influence the quality of the environment or affect flood risk we have very little direct control over the way that land is developed. This is the responsibility of local planning authorities.

Local planning authorities prepare statutory development plans. The policies in these plans will guide the way that land is developed in the future.

Guidance has been published and will soon be updated for local planning authorities to encourage them to adopt policies that protect the water environment from the harmful effects of development. Where we can, the Environment Agency will reinforce these policies when we comment on planning

matters or if we are making our own decisions. The Agency will also advise planning authorities on planning matters related to industrial processes, waste management and the storage, use and disposal of radioactive material.

This Action Plan highlights our concerns about development. The Environment Agency is in detailed discussions with local planning authorities with respect to provision of land allocations in Local Plans for their Plan period up to 2011, see Issue 17 Development Pressure.

2.4 The River Parrett Catchment

The River Parrett Catchment covers an area of approximately 1251 km^2 and has its source near Chedington to the south of Crewkerne. From its origin to Stert Point, Bridgwater where it enters the Severn Estuary, it is about 59 km long and falls 160 m to sea level. The River Parrett flows north, passing Martock, and is joined by the River Isle and River Yeo to the south of Langport, becoming tidal at Oath Sluice. The Parrett has an exceptionally long tidal reach. Much of the surrounding land is below high spring tide level. The flood tide carries large quantities of silt from the Severn Estuary which causes problems for channel management in the tidal reaches. The River Tone is a major tributary which joins the tidal Parrett at Burrowbridge. The River Tone is the subject of a Catchment Management Plan published in September 1995. The River Cary rises at Castle Cary and travels in a westerly direction before entering the King's Sedgemoor Drain at Henley Corner, and continuing across the Somerset Moors to join the tidal River Parrett downstream of Bridgwater at Dunball Sluice. There are further contributions below the tidal limit from a number of streams which have their headwaters on the east side of the Quantock Hills.

The middle and lower reaches of the Parrett and its tributaries have a very low gradient.

The Bridgwater and Taunton Canal leaves the Tone at Firepool Lock in Taunton. At Hamp in Bridgwater a weir was constructed under the British Rail Act 1969 which authorized the closure of Bridgwater Docks to enable surplus water to run into the tidal River Parrett. The canal ends at Bridgwater Docks, where a sluice is provided to allow a discharge into the River Parrett to provide a small flow in the canal.

The population of the catchment was estimated to be 196,000 in 1991 concentrated mainly in the following parishes:

Parish	Population 1993
Yeovil	38,000
Bridgwater	35,000
Chard	11,114
Sherborne	9,272
Crewkerne	6,542
Somerton	4,532
Ilminster	4,202
Martock	4,111
Langport including Huish Episcopi	2,911

Rainfall varies from 1000 mm a year in the southern areas of higher ground to less than 700 mm a year on the Somerset Levels and Moors.

The catchment is predominantly agricultural with over 93% of land devoted to agriculture compared with the national average of 80%. There is some cereal growing in a belt to the west and east of Yeovil but traditionally pasture for dairy and beef cattle were predominant until the recent BSE crisis. Farmers now seem to be switching to cereal or vegetable production, with more maize being grown for fodder. The Somerset Levels and Moors Environmentally Sensitive Area (ESA) is

encouraging farmers to farm less intensively, with higher winter and spring water levels than over the past 50 years. Water levels are controlled by a system of rhines and ditches and sluices, with pumping stations operated by the Environment Agency to return excess water to the rivers.

Much of the Parrett Catchment is designated as a valued landscape by both national (e.g. Area of Outstanding Natural Beauty (AONB)) and county (Special Landscape Area (SLA)) designations.

The landscape character of the catchment is heavily influenced both by the complex and distinctive geology and the activities of man. The dominant feature is the low lying moorland landscape, with its rectilinear pattern of man-made drainage channels, pollarded willows and scattered tree and shrub cover; expansive, open and relatively remote but essentially a controlled wetland. The area around Bridgwater Bay exhibits similar characteristics, with straight reed-filled ditches draining the open landscape of improved pasture and arable fields. The Quantock edge landscape with its steep-sided valleys supports a more intimate mosaic of oak woodlands and scrub, heathland and conifer plantations, the smaller fields divided by hedgerows with mature trees.

The Fivehead Vale is characterised by a gently undulating landscape with most fields managed as permanent pasture and enclosed by hedgerows. To the south of the catchment the steep scarp slopes of the Blackdown and Dorset Hills are more heavily wooded, with deeply incised river valleys.

The catchment is very important for wildlife. Of over-riding importance is the internationally designated lowland wet grassland resource of the Somerset Levels and Moors, the largest remaining area of this habitat in Britain. Seven of the wetland Sites of Special Scientific Interest (SSSI) have recently been designated as a Special Protection Area (SPA)/RAMSAR site of international importance. The lowest reach of the Parrett is already a SPA and RAMSAR area and is a proposed Special Area of Conservation (pSAC) under the EC Habitats Directive. These designations are because of their international importance for over-wintering wildfowl and breeding waders, see Section 3.3.1.

3. Activity Tables

The Activity Tables which follow, outline actions for resolving the issues identified in the River Parrett LEAP Consultation Report and through the public consultation.

For a full discussion of the issues refer to Section 7 of the River Parrett LEAP Consultation Report. The costs identified represent our planned expenditure over the next five years. However, our policy and priorities may change during this time; this may affect how much we will actually be able to spend on specific issues.

The financial years covered by this Plan are represented by a single date, for example, '97' represents the financial year April 1997 to March 1998. Where costs are unknown this is indicated by a 'U' in the tables.

These actions are in addition to our everyday work which commits substantial resources to managing and improving the environment; the scope of that work has been explained in the Consultation Report.

Individual river stretches have been numbered and are shown in brackets in the activity tables. Reference should also be made to Map 2 and Appendix 4 List of Numbered River Stretches.

3.1 Pollution Control

We aim to maintain and, where appropriate, improve the quality of water for all those who use it. This is achieved by setting water quality targets for the catchment based on:

- River Quality Objectives to protect water quality for recognized uses;
- Standards laid down in EC Directives.

We supplement our chemical quality monitoring with biological quality monitoring.

We protect groundwater by implementing our groundwater protection policy set out in the 1992 NRA publication "Policy and Practice for the Protection of Groundwater".

Non-compliance with the above standards is covered in detail in the issues which deal with the cause of the failure.

3.1.1. River Quality Objectives and EC Directives

The water quality targets we use in all rivers are known as River Quality Objectives (RQOs). RQOs are used for managing water quality and are based on the River Ecosystem (RE) classification scheme. This scheme is made up of five water quality classes (RE1 to RE5) which reflect the chemical quality needed by different types of animal communities, including the types of fishery they are able to support.

RQO (RE Class)	Class Description
RE1	Water of very good quality suitable for all fish species.
RE2	Water of good quality suitable for all fish species.
RE3	Water of fair quality suitable for high class coarse fish populations.
RE4	Water of fair quality suitable for coarse fish populations.
RE5	Water of poor quality which is likely to limit coarse fish populations.

The Consultation Report introduced proposals for RQOs based on the RE classes. Note that the proposed Long Term RQO for the South Petherton Stream has been dropped as it is considered to be unachievable.

Map 2 shows where current water quality does not comply with its RQO. The non-compliance is expressed either as a marginal or a significant failure. Significant failures are those where we are 95% certain that the river stretch has failed to meet its RQO. Marginal failures are those where we are between 50% and 95% certain that the stretch has failed to meet its RQO.

There are seven EC Directives concerned with water quality which apply in this catchment (for details see River Parrett Consultation Report, pages 136-144).

- EC Dangerous Substances Directive 76/464/EEC

  In 1996 there was one failure under this directive of the environmental quality standard for copper.

- EC Freshwater Fish Directive 78/659/EEC

  There were two failures under this directive, one in 1995 and one in 1996, which required investigation.

- EC Urban Waste Water Treatment Directive 91/271/EEC

  Under Asset Management Plan 2 (AMP2) Bridgwater Sewage Treatment Works (STW) will be providing secondary treatment by the year 2000 to comply with the Urban Waste Water Treatment Directive (UWWTD) requirements of a 70% reduction in biological oxygen demand (BOD). This will improve the quality of the effluent and also ensure EC Bathing Water compliance at Burnham is more secure.

  There are no Sensitive Areas in this catchment.

- EC Surface Water Abstraction Directive 75/440/EEC

  One site, Ashford Reservoir, failed to comply with the nitrate standard in 1995.

- EC Nitrates Directive 91/676/EEC

  There are no surface waters designated as Polluted Waters in the catchment.

  There are two nitrate vulnerable zones which drain to groundwaters.

- EC Habitats Directive 92/43/EEC

  A review programme is being established to consider the discharges to Habitats Directive sites, with discharges to Special Protection Areas (SPAs) and Special Areas of Conservation (SACs) as a priority.

- EC Groundwater Directive 80/68/EEC

  Discharges to groundwater are controlled by our Groundwater Protection Policy (see River Parrett Consultation Report, page 150).

We continue to monitor for North Sea Conference Annex 1A and Paris Commission (ParCom) substances at Westover Bridge (see River Parrett Consultation Report, page 144), and report our findings to the Department of the Environment, Transport and the Regions (DETR). Annex 1A monitoring has shown that there has never been any exceedence of environmental quality standards at Westover Bridge. Therefore no reductions are required in the loads of Annex 1A substances entering the sea via the River Parrett.

We monitor the ecological quality of rivers by sampling benthic macroinvertebrates. These are small animals which live in river sediments. They are unable to move far and so are affected by long term conditions in the river.

We collect samples from the river during the spring and autumn and make a list of the different families (taxa) of macroinvertebrates present. We compare the range of families found to what we would expect to find in a similar unpolluted river using the River Invertebrate Prediction and Classification System (RIVPACS). We have used this information to classify rivers as follows:

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

We carry out a routine monitoring programme for general biological quality and also monitor the impact of a number of sewage treatment works (STWs). We have included stretches where biological quality has fallen to class 'd' or less as 'effects' in appropriate issues.

There are a number of impacts on water quality in the catchment which cause or contribute to non-compliance with RQOs and EC Directives:

- Farming activities such as slurry or silage leakage, yard washings or runoff from fields of fertilizer and pesticides are responsible for some instances of poor water quality.

Issue 1: Impact of Farming Activities on Water Quality

Effect	Actions	Action By	Cost to Agency (£K)	Financial Year 97	98	99	00	01
Significant non-compliance with RE2 (2000) on Cannington Brook - Blackmore Farm to Bradley Green (19)	1.1 We will carry out a farm pollution campaign and/or the monitoring of consented discharges. *Note: Further investigations may be required.*	Agency	1		●			
Marginal non-compliance with long term RQO of RE3 on Cary - Lovington to Higher Farm (28)	1.2 A farm pollution campaign will be carried out.	Agency	2		●			
Marginal non-compliance with long term RQO of RE2 on Yeo - Milborne Port to Upstream Sherborne Lake (40)	1.3 Further investigations into the actual sources of this pollution still to be made. *Note: Some progress made on point source pollution above Milborne Port. Base flow is mainly groundwater which is low in DO may contribute.*	Agency	1	●	●			
	1.4 Agricultural inputs from Purse Caundle will be investigated.	Agency	1	●				
Marginal non-compliance with long term RQO of RE2 on Wriggle - Confluence with Beer Hackett Stream to Confluence with Yeo (54)	1.5 Recent farm pollution prevention campaign will be followed up with regulation of farm discharges to Beer Hackett Stream.	Agency	1	●				
Historic marginal non-compliance with long term RQO of RE2 on Closworth Stream - Princes Place to Confluence with Sutton Bingham Stream (61)	1.6 We will investigate sources of agricultural runoff and take steps to reduce inputs to the stream.	Agency	1.5	●	●			
	1.7 We will promote Code of Good Agricultural Practice.	Agency	Zero		Ongoing			
Historic marginal non-compliance with RE3 on Chinnock Brook - East Chinnock to Confluence with Parrett (84)	1.8 We will ensure the farms identified install the necessary improvements in 1997.	Agency	0.4	●				
	1.9 We will continue to monitor the brook to assess the effectiveness of the farm improvement.	Agency	0.5	●	●			

Effect	Actions	Action By	Cost to Agency (£K)	Financial Year 97	98	99	00	01
Pesticide residues in Durleigh Reservoir catchment *Note: Raised as concern by Wessex Water Services Ltd (WWSL)*	1.10 Liaise with WWSL over results of their pesticide monitoring to determine how effective recent pollution measures have been. *Note: A recent pollution prevention campaign (summer 1997) was aimed at targeting safer use and applications of pesticides in the Durleigh catchment. Now complete, awaiting draft report.*	WWSL, Agency	2	●				
Widespread evidence of nutrient enrichment on Stogursey Brook, Cannington Brook, Lam Brook, Upper Parrett, Upper Yeo and tributaries	1.11 We will investigate the sources of nutrient inputs to these watercourses and take appropriate action depending on the source.	Agency	4		●			
Marginal non-compliance with long term RQO of RE3 on Corton Denham Stream - Rimpton to Confluence with Yeo (53)	1.12 Point source agricultural pollution identified at Staffords Green. Farm improvement scheme in progress.	Agency	0.6	●				
Marginal non-compliance with long term RQO of RE2 on Sutton Bingham Stream - Higher Halstock to Downstream Sutton Bingham Reservoir (58)	1.13 Point source agricultural input identified. Improvement scheme in progress.	Agency	0.6	●				
Non-compliance with EC Freshwater Fish Directive total ammonia standard on King's Sedgemoor Drain	1.14 Continue monitoring of piggery at Greinton to measure impact of remedial action. Investigate other possible sources.	Agency	0.4	●	●			
Non-compliance with EC Surface Water Abstraction Directive nitrate standard at Ashford Reservoir	1.15 Investigate source of farm runoff and take appropriate action.	Agency	0.4		●			

Some sewage treatment works (STW) consents need to be reviewed in order to ensure that they have been set at a level which will allow the achievement of RQOs/Long Term RQOs. Those STWs which need improving will be considered for inclusion in the Water Companies latest improvement plan (AMP3). We will continue to monitor the impact of STW discharges on the environment.

Issue 2: Impact of Sewage Treatment Works (STWs) on Water Quality

Effect	Actions	Action By	Cost to Agency (£K)	Financial Year 97	98	99	00	01
Marginal non-compliance with long term RQO of RE2 on Parrett - Confluence with Crewkerne Brook to Confluence with Broad (5)	2.1 Non-compliance probably due to Crewkerne East STW. Further survey work to be undertaken this year/early 1998 on Crewkerne Stream. If necessary seek improvements to Crewkerne STW.	Agency	3		●			
Marginal non-compliance with RQO of RE3 (2000) on Isle - Chard STW to Dunpole Farm (63).	2.2 Non-compliance most likely due to Chard STW. New works currently being constructed to be up and running November 1998	WWSL	Zero		●			
Marginal non-compliance with RQO of RE2 on Isle - Upstream Ilminster Bifurcation to Downstream Ilminster Bifurcation (65)	2.3 Non-compliance probably due to the influence of Ilminster STW. Desk study to be undertaken. If necessary seek improvements to Ilminster STW.	Agency	0.2	●	●			
Significant non-compliance with RQO of RE3 (2000) on Hinton Meads Brook - Hurst to Confluence with Welhams Brook (81)	2.4 Non-compliance caused by Martock STW which currently discharges to Hinton Meads Brook. Martock STW outfall to be relocated to the River Parrett in 1998.	WWSL	Zero		●			
Marginal non-compliance with RQO of RE3 on Crewkerne Brook - Crewkerne to Confluence with Parrett (88)	2.5 Non-compliance probably due to Crewkerne East STW. Further survey work to be undertaken this year/early 1998 on Crewkerne Stream. If necessary seek improvements to Crewkerne STW.	Agency	1	●	●			
Marginal non-compliance with long term RQO of RE2 on Cannington Brook - Cannington to Confluence with tidal Parrett (21)	2.6 Non-compliance possibly due to Cannington STW. Desk study to be undertaken. if necessary seek improvements to Cannington STW.	Agency	1.5	●	●			
Possible future non-compliance with long term RQO of RE3 on Petherton Stream - North Petherton to Confluence with tidal Parrett (35)	2.7 North Petherton STW may, in the future, cause long term RQO non-compliance. The risk needs to be assessed and if necessary improvements will be sought to North Petherton STW.	Agency	1.7	●	●			

Our monitoring for water quality sometimes highlights non-compliance with environmental standards for which we do not know the cause. We would normally either continue monitoring to improve our understanding of the problem or carry out an investigation into the cause.

Issue 3: Unknown Causes of Poor Water Quality

Effect	Actions	Action By	Cost to Agency (£K)	Financial Year 97	98	99	00	01
Biological class d site on the South Petherton Stream at East Lambrook	3.1 We will investigate the cause.	Agency	1		●			
New non-compliance: Marginal non-compliance with RQO of RE3 on Cary - Somerton STW to Henley (30)	3.2 Investigate the cause of the non-compliance. *Note: DO non-compliance. Cause possibly due to poor oxygenated inputs via pumping stations from nearby lowland moors.*	Agency	0.4		●			
New non-compliance: Significant non-compliance with RQO of RE2 on Isle - Confluence with Fivehead to Confluence with Parrett (68)	3.3 Investigate the cause of the non-compliance. *Note: DO non-compliance. Cause not known.*	Agency	0.4		●			
New non-compliance: Marginal non-compliance with RQO of RE2 on Fivehead - Hatch Beauchamp to Confluence with Blackwater Tributary (73)	3.4 Investigate the cause of the non-compliance. *Note: DO non-compliance. Cause not known. Coincided with highest temperatures during summer.*	Agency	0.4		●			
New non-compliance: Marginal non-compliance with RQO of RE2 on Fivehead - Hatch Green/Blackwater Tributary Confluence to Confluence with Isle (74)	3.5 Investigate the cause of the non-compliance. *Note: DO non-compliance. Cause not known although probably related to high temperatures in late summer.*	Agency	0.4		●			
New non-compliance: Marginal non-compliance with RQO of RE2 on Merriot Stream - Upstream Hinton Park Farm to Confluence with Parrett (85)	3.6 Investigate the cause of the non-compliance. *Note: BOD non-compliance. Cause not known.*	Agency	0.6		●			

Effect	Actions	Action By	Cost to Agency (£K)	Financial Year 97	98	99	00	01
New non-compliance: Marginal non-compliance with long term RQD of RE2 on Fiddington Brook - Source to Hornhill (12)	3.7 Investigate the cause of the non-compliance. *Note: BOD non-compliance. No evidence to suggest Nether Stowey STW. Cause unknown.*	Agency	0.4		●			
New non-compliance: Marginal non-compliance with RQO of RE2 on Cannington Brook - Ashford Reservoir to Blackmore Farm (18)	3.8 Investigate the cause of the non-compliance. *Note: BOD non-compliance. Cause unknown.*	Agency	0.4		●			
New non-compliance: Marginal non-compliance with RQO of RE2 on Durleigh Brook - Pightley to U/S Durleigh Reservoir (32)	3.9 Investigate the cause of the non-compliance. *Note: DO non-compliance. Cause unknown.*	Agency	0.4		●			
Non-compliance with EC Dangerous Substances Directive List II, copper EQS at receiving water downstream of Walpole Drove Waste Disposal site	3.10 We will increase the sampling frequency and fieldwork inspections to monitor the leachate discharge.	Agency	0.2		●			
New non-compliance: Significant non-compliance with RQO of RE2 on Cobbs Cross Stream - Goathurst downstream Knoll Farm to Confluence with Parrett (37)	3.11 Investigate the cause of the non-compliance. *Note: DO non-compliance possibly due to fish farm.*	Agency	0.4		●			
Marginal non-compliance with Long Term RQO of RE2 on Sutton Bingham Stream - Higher Halstock to Downstream Sutton Bingham Reservoir (58)	3.12 Investigate the cause of the non-compliance. *Note: DO non-compliance. Cause unknown.*	Agency	0.4		●			

Effect	Actions	Action By	Cost to Agency (£K)	Financial Year 97	98	99	00	01
New non-compliance: Significant non-compliance with RQO of RE3 on the Back Brook - Downstream Dimmer Waste Disposal Site to Confluence with Cary (14)	3.13 Investigate the cause of the non-compliance. *Note: DO non-compliance. Cause unknown.*	Agency	0.4		●			
New non-compliance: Marginal non-compliance with RQO of RE4 and significant non-compliance with long term RQO of RE3 on Hornsey Brook - Source to Confluence with Yeo (52)	3.14 Investigate the cause of the non-compliance. *Note: DO and copper non-compliance. Cause unknown.*	Agency	0.4		●	●		

Industrial discharges may also cause poor water quality and a potato grading plant on the Cannington Brook is thought to be contributing to non-compliance with the RQO on one stretch.

The tidal River Parrett receives combined discharges from the UCB Cellophane site in Bridgwater, including exceedence of proposed EQS for sulphide in saline water under low flow conditions. This discharge is a mixture of industrial process effluent, sewage and rainfall runoff. UCB is authorized under IPC but other contributors are not, see Issue 4 Impact of Industrial Discharges on Water Quality.

Issue 4: Impact of Industrial Discharges on Water Quality

Effect	Actions	Action By	Cost to Agency (£K)	Financial Year 97	98	99	00	01
Marginal non-compliance with RQO of RE2 on Cannington Brook - Bradley Green to Cannington (20)	4.1 We will carry out a survey and improvements will be recommended to potato grading plant.	Agency	0.4		●			

Effect	Actions	Action By	Cost to Agency (£K)	Financial Year 97	98	99	00	01
Effect on tidal River Parrett of combined discharges from the UCB Cellophane site in Bridgwater	4.2 Reduction of sulphide content of discharge at source by March 1998.	UCB Cellophane under IPC Improvement Programme	Zero	●	●			
	4.3 Separation and re-routing of sewage and non-UCB effluents is being examined for feasibility and costs. Otherwise EC Urban Wastewater Treatment Directive will apply.	Agency, Wessex Water, UCB	1	●				
	4.4 Continued assessment of impact of discharge on tidal River Parrett to confirm UCB modelling conclusions.	Agency	1.6 per survey	●	●	●	●	●
	4.5 Further reductions in UCB effluent to meet BATNEEC.	UCB, Agency under IPC Improvement Programme	Zero	●	●			

Other factors which have an impact on water quality in this catchment are high temperature, low flows and nutrient enrichment (leading to eutrophication which often results in blanket plant cover causing low dissolved oxygen (DO) and reduced light penetration). In some cases the cause of poor water quality is not known, and we will investigate the causes. Penning is the holding back of river at artificially high levels using structures such as fixed weirs or adjustable sluices. Penning can reduce river flows leading to lack of aeration and subsequent low dissolved oxygen levels.

Issue 5: Impact of Penning, Low Flow, Nutrient Enrichment, Algal and Weed Growth

Effect	Actions	Action By	Cost to Agency (£K)	Financial Year 97	98	99	00	01
New non-compliance: Significant non-compliance with RQO of RE3 on King's Sedgemoor Drain - Henley to Confluence with 18 Feet Rhine (22) *Note: DO failure*	5.1 Investigate the relative contributions of low flows, duckweed and high temperature to low dissolved oxygen and take appropriate action.	Agency	0.6		●			
Significant non-compliance with long term RQO of RE3 on King's Sedgemoor Drain - Confluence with 18 Feet Rhine to Confluence with Sowy (23)	5.2 Monitor the results of a large pollution prevention campaign which was recently completed in catchment. Various improvements to water quality should be seen throughout the catchment. *Note: Nutrient enrichment affects small watercourses which are a substantial part of the wetland resource.*	Agency	4	●				

Effect	Actions	Action By	Cost to Agency (£K)	Financial Year 97	98	99	00	01
Marginal non-compliance with long term RQO on RE3 on King's Sedgemoor Drain - Confluence with Sowy to Bawdrip (24)	ditto	ditto	ditto	●				
New non-compliance: Marginal non-compliance with RQO of RE3 on King's Sedgemoor Drain - Bawdrip to Dunball 1(25)	ditto	ditto	ditto	●				
Marginal non-compliance with long term RQO of RE3 on King's Sedgemoor Drain - Dunball 1 to Confluence with tidal Parrett (26)	ditto	ditto	ditto	●				
	5.3 Promote new buffer strips and marginal reedbeds to help remove nutrients from agricultural runoff. *Note: FWAG give advice and help to farmers preparing applications for Countryside Stewardship Grants.*	Agency, FWAG	Zero	Ongoing				
New Effect: Wessex Water have commented that Durleigh Reservoir may be at risk from nitrate enrichment	5.4 A pollution prevention survey in summer 1997 specifically aimed at nitrate and pesticide runoff was recently carried out over the Durleigh catchment and advice given. Report pending. Further investigations to follow.	Agency	1		●			
Proliferation of duckweed	5.5 We will investigate the reason for duckweed proliferation and its impact on water quality especially in the Somerset Levels and Moors.	Agency, English Nature, RSPB, Somerset Wildlife Trust	U	Ongoing				
Penned winter water levels are too low, causing lack of physical space for fish in many streams and leading to fish and plant kills due to streams freezing solid	5.6 Identify the extent of watercourses which would benefit from a change in regime and examine ways in which the fisheries habitat can be improved without compromising the interests of other users. In some areas this will require close co-operation with other interested parties including IDBs and riparian owners and where this proves possible implement changes to water level management.	Agency, IDBs, English Nature, riparian owners	U	●	●			

Effect	Actions	Action By	Cost to Agency (£K)	Financial Year 97	98	99	00	01
New non-compliance: Significant non-compliance of RQO of RE3 on Hinton Meads Brook - Fosseway to Hurst (80) *Note: DO non-compliance*	5.7 Investigate the cause of low DO. *Note: This watercourse is penned during the summer and is known to suffer from low DO. Possible contribution from warm temperatures in late summer.*	Agency	0.4		●			
Non-compliance with EC Freshwater Fish Directive DO standard on River Cary - King's Sedgemoor Drain	5.8 We will carry out extra monitoring as planned to investigate the extent of eutrophication.	Agency	0.4		●			

In a few cases we need to review the location of the monitoring point. In carrying out this detailed review of water quality for this Action Plan we have discovered that in a few cases the existing location of the monitoring point gives misleading information.

Issue 6: Inappropriate Location of Monitoring Point

Effect	Actions	Action By	Cost to Agency (£K)	Financial Year 97	98	99	00	01
Significant non-compliance with RQO of RE3 (1998) on Durleigh Brook - Upstream Durleigh Reservoir to Confluence with Parrett (33)	6.1 We will investigate the causes of low DO. *Note: A likely cause is inappropriate location of monitoring point.*	Agency	0.4		●			
New non-compliance: Marginal non-compliance with RQO of RE2 on Fivehead - Blackwater to Confluence with Hatch Green Tributary (71)	6.2 Review location of monitoring point. *Note: DO non-compliance.*	Agency	Zero		●			
New non-compliance: Marginal non-compliance with RQO of RE2 (1999) on Parrett Tributary - Parrett Tributary Bagnell Farm to Confluence with Parrett (83)	6.3 Review location of monitoring point. *Note: BOD and total ammonia non-compliance.*	Agency	Zero		●			

Effect	Actions	Action By	Cost to Agency (£K)	Financial Year 97	98	99	00	01
New non-compliance: Marginal non-compliance with RQO of RE2 on Merriot Stream Tributary - Maincombe to Confluence with Merriot Stream (86).	6.4 Review location of monitoring point. *Note: BOD non-compliance*	Agency	Zero		●			
New non-compliance: Marginal non-compliance with RQO of RE2 on Stogursey Brook - Stringston to Confluence with Dodington Tributary (1)	6.5 Review location of monitoring point. *Note: BOD non-compliance.*	Agency	Zero		●			
Marginal non-compliance with Long Term RQO of RE2 on Stogursey Brook - Stogursey to Confluence with Stringston Tributary (3)	6.6 Review location of monitoring point. *Note: BOD non-compliance.*	Agency	Zero		●			
Marginal non-compliance with RQO of RE2 on Stogursey Brook - Stringston/ Dodington Tributary Confluence to Sea (4)	6.7 Review location of monitoring point. *Note: BOD non-compliance.*	Agency	Zero		●			
Biological class d site on the Stogursey Brook at Stolford Bridge	6.8 Review location of monitoring point.	Agency	Zero		●			

Consented discharges to designated conservation areas can have a detrimental impact on wildlife. We are required by the EC Habitats Directive to review those discharges to Special Protection Areas (SPAs) and Special Areas of Conservation (SACs); a programme is being drawn up.

Issue 7: The Need to Review Discharge Consents (Habitats Directive)

Issue	Actions	Action By	Cost to Agency (£K)	Financial Year 97	98	99	00	01
The need to review the consents for discharges to conservation areas designated under the Habitats Directive	7.1 A review programme is being established for discharges to SPAs and SACs.	Agency	U		●	●		

3.1.2 Somerton Pollution Incident Update

Sediment removal from the affected ponds was completed in August 1996. Environmental monitoring of the site ceased at the end of 1996. The Environment Agency has no longer any involvement in the site.

3.1.3 Waste Management

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

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

- Reduction
- Reuse
- Recovery - recycling, composting, energy.

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

The Landfill Tax is enforced by HM Customs and Excise. There are two levels of tax, £2 per tonne for inactive (inert) wastes and £7 per tonne for all other wastes disposed of at landfill sites. Landfill Tax is levied on the landfill site operators and before VAT is calculated. Site operators can contribute to approved environmental bodies enrolled with the regulatory authority, ENTRUST Ltd, for specific projects approved by ENTRUST Ltd. In return they can claim a tax credit worth 90% of any contribution to a maximum credit of 20% of their landfill tax liability. Further information on approved environmental bodies can be obtained from ENTRUST Ltd, 154 Buckingham Palace Road, London SW1W 9TR Telephone 0171 823 4574 Fax 0171 824 8699.

The Agency supports the Government's strategy and will play a key role in achieving more sustainable waste management. A number of targets have been set within the White Paper. Targets include:

- reducing the proportion of controlled waste going to landfill from 70% to 60% by 2005
- recovering 40% of municipal waste by 2005
- by the end of 1998, to set a target for overall waste reduction
- recycling or composting 25% of household waste by 2000
- having easily accessible recycling facilities for 80% of householders by 2000
- encouraging 40% of domestic properties with a garden to carry out home composting by 2000.

Nationally, waste surveys need to be carried out by the Agency to provide accurate, consistent data on waste arisings, i.e. what waste is produced where and

in what quantities. The Agency will encourage and support waste minimization initiatives and recycling facilities.

There is a need for the Environment Agency to develop a regional strategy to identify the current and future extent of the types and quantities of waste and the management facilities needed. The first requirement is the collection of accurate statistics from the current waste management situation to provide an accurate base. This will be followed by the development of a strategy that will take account of the need to follow the policies of regional self-sufficiency for waste management and the use of the proximity principle when considering potential strategies.

Issue 8: The Need for Accurate Data on Waste Arisings

Issue	Actions	Action By	Cost to Agency (£K)	Financial Year 97	98	99	00	01
The need for accurate data on waste arisings	8.1 Carry out a waste arisings survey as part of a national initiative. *Note: This will support the development of a regional waste strategy.*	Agency	U	Ongoing				

Issue 9: The Need for Waste Minimization and Improved Waste Management

Issue	Actions	Action By	Cost to Agency (£K)	Financial Year 97	98	99	00	01
The need for a reduction in waste production and the amount going to landfill	9.1 Paricipate in waste reduction initiatives e.g. Somerset Waste Minimization Group (SWMG).	Agency/SWMG	U	Ongoing				
	9.2 Provide advice and guidance on waste minimization and support initiatives.	Agency/Local Authorities/Agenda 21 Groups	U	Ongoing				

3.1.4. Integrated Pollution Control

The Environment Agency is the statutory authority in England and Wales for regulating the largest and most complex industrial processes. To do this we use a system known as Integrated Pollution Control (IPC). This system requires the use of best available techniques not entailing excessive cost (BATNEEC) to prevent the release of particular substances into the environment or, where this is not practicable, to minimize their release and render them harmless. Operators of these controlled processes are required to have an authorization granted by the Agency to operate the process and have to comply with the conditions to which it is subject. The IPC Authorization covers releases of pollutants to water, land and air from Part A processes. Two lists of processes have been prescribed by regulations for control: Part A processes are controlled under IPC by the Agency; releases to the air from Part B processes are controlled at a local level under a system of Local Authority Air Pollution Control. The Agency has strong enforcement powers under the Environmental Protection Act 1990 to take action where breaches of compliance have occurred, including prohibition and/or prosecution action in serious cases.

As well as the general BATNEEC condition another objective for all IPC authorized processes is to have regard to the best practicable environmental option (BPEO) to minimize pollution of the environment taken as a whole. A key concept of IPC is the precautionary principle - to seek to prevent a release at source; BATNEEC and BPEO are important tools in the practical application of this principle.

3.1.5 Air Quality

The Government in 1996 published its draft National Air Quality Strategy 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.

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 they will make action plans to improve air quality in these areas. Local authorities are the lead authority in the regulation of air quality. We will work closely with local authorities to help achieve the objectives of the National Air Quality Strategy mainly through our regulation of Part A process releases to air. There are only two minor local issues within this catchment.

Issue 10: Emissions to Air from UCB and Crosby Ltd

Sub-Issue	Actions	Action By	Cost to Agency (£K)	Financial Year 97 98 99 00 01
The need to reduce emissions to air including the unpleasant odour from UCB Cellophane Ltd., Bridgwater	10.1 Although progress has been made, investigations by UCB into further reductions are required.	UCB, Agency	U	Ongoing
The need to reduce dust and odour from wood-fired boilers at Crosby Ltd., Bridgwater	10.2 Our improvement programme requires Crosby to update their process to Best Available Technology Not Entailing Excessive Cost (BATNEEC).	Crosby Ltd., Agency	U	Ongoing

3.1.6 Radioactive Substances

Radioactive substances are present in the environment as a result both of natural processes and of man's technological developments. The uncontrolled and incautious use of these substances can pose both immediate and long term hazards.

The Environment Agency is the enforcement authority for England and Wales of the Radioactive Substances Act 1993. This statute is concerned with the keeping, use and disposal of radioactive substances and, in particular, the regulation of radioactive waste disposal. There are some eight sites in the catchment area which are currently registered under the Radioactive Substances Act, one of which is a hospital which is also authorized to accumulate and dispose of radioactive waste. These sites are mainly manufacturing processes using sealed radioactive sources for industrial process control purposes. There are no issues arising from these activities in this catchment.

3.2 Water Resources

We aim to manage water resources to achieve the right balance between the needs of the environment and those of legitimate abstractors.

In 1995 the NRA published the Water Resources Development Strategy for South West Region - *Tomorrow's Water*. This Strategy has been adopted by the Agency and sets out how we would like to see water resources developed in the future. Our Strategy forms the basis on which the proper use and sustainable development of resources can be assured well into the next century.

To promote our strategy for the region we will:

- encourage the efficient use of water by everyone
- expect abstractors to use existing sources efficiently before new sources are developed
- approve developments that cause the minimum problems for the environment. New water resource developments will be accompanied by measures for environmental protection in their abstraction licence conditions e.g. prescribed minimum flow.

Here are three examples of our approach to managing water resources in the catchment:

- We plan for the sustainable development of water resources, developing criteria to assess the reasonable needs of abstractors and the environment
- We plan the future use of water on the basis that water supply companies reduce leakage to an acceptable level and make best use of available resources
- We study the spending plans of the water supply companies (Wessex Water Services Ltd - WWSL in this catchment) - known as Asset Management Plans (AMP) - to ensure that these plans do not overlook opportunities to improve flows in rivers which are stressed by abstraction.

Forecasts have been made of public and private water demand up to the year 2021. These demand forecasts are only available at a larger Strategic Supply Zone level and do not relate to individual catchments. The Parrett catchment forms part of Wessex Water Services Ltd's (WWSL) Somerset Supply Zone which extends from Lynton in the west to Bruton in the east, and from Highbridge in the north to Chard in the south. In order to meet current demand, local resources are

supplemented by importing water (9 Ml/d) into the Zone via a grid system of pipes from Wimbleball Reservoir, Otterhead Lakes and Forches Corner.

Under the high demand scenario the current level of demand in WWSL's Somerset Supply Zone is forecast to rise from 124 Ml/d to 175 Ml/d by 2021 assuming the current level of metering and leakage control with high growth in domestic, industrial and commercial consumption. Should this growth be somewhat slower and WWSL reduce leakage to 120 litres per property per day then demand is forecast to rise to 131 Ml/d by 2021 (low demand scenario).

Compared with the current reliable yield of the Somerset Zone (115 Ml/d) under the high scenario there will be a deficit of 60 Ml/d in 2021 and 16 Ml/d under the low scenario in 2021.

Potential options for meeting future increased supply needs are for WWSL to negotiate with South West Water Services Ltd (SWWSL) for an increase in the quantity of water imported from Wimbleball Reservoir, (see the *River Exe Catchment Management Plan Action Plan*, Action 5a) or to develop an abstraction from the Bristol Avon at Newton Meadows, near Bath (see *the Upper Bristol Avon Catchment Management Plan Action Plan*, Actions 7 and 8).

The Agency and SWWSL have recently signed an operating agreement which determines how Wimbleball Reservoir is to be managed. This new agreement incorporates the operation of the new pumped storage scheme from the River Exe and allows for the possibility of allocating additional resources to supply WWSL's Somerset Supply Zone. The latter would require a variation to WWSL's existing abstraction licence.

A small number of local scale environmental problems result from water abstraction:

- The River Parrett can cease to discharge to the tidal reaches in summer.
- There is a need to optimize the use of water resources on the Somerset Moors in conjunction with the requirements of the IDBs and the conservation organizations. Improved understanding of the water management systems and better control of their operation would ensure best use of the available resources and minimize the diversion of water from the principal rivers and drains during dry weather. To undertake more effective water management we need a primary gauging station on the Lower Parrett.
- Cannington IDB and farmers downstream are concerned about the reduced flow downstream of Ashford Reservoir as a result of operational changes at the treatment works following the commissioning of a direct main from Hawkridge Reservoir.
- Abstraction from the King's Sedgemoor Drain by Royal Ordnance Plc during low flow conditions may cause operational difficulties for other abstractors such as UCB Cellophane Ltd. Under these conditions environmental damage could occur.

There is a deterioration in the water quality of the River Yeo between Sherborne Lake and Clifton Maybank during occasional augmentation periods to support abstraction to Sutton Bingham Reservoir.

Issue 11: The Need to Improve Water Resource Management in the Catchment

Sub-Issue	Actions	Action By	Cost to Agency (£K)	Financial Year 97	98	99	00	01
Optimization of water resources on the Somerset Levels.	11.1 Investigate the possibility of fine tuning the take of water from the river to the Moors and produce a report	Agency, IDBs potential consultancy involvement	4		●			
	11.2 Carry out an investigation into the need for, and feasibility of, providing a gauging station downstream of Langport and produce a report.	Proposed consultancy study	15		●	●		
Reduced flow downstream of Ashford Reservoir	11.3 Review impact of Ashford Reservoir on downstream water interests and act according to findings.	Agency	5		●	●	Ongoing	
Low flow abstraction problems from the King's Sedgemoor Drain	11.4 Investigate impact of abstractions from King's Sedgemoor Drain and act according to findings.	Agency, licence holders	10		●	●		
Impact of releases from Sherborne Lake on River Yeo water quality	11.5 Develop and document an operational strategy to minimize the impact of this release.	Agency, WWSL	1		●	●		

3.3 Wildlife, Landscape, Flood Defence and Recreation

3.3.1 Wildlife

In fulfilling all our functions we must contribute to the conservation of nature, landscape and archaeological heritage. We have a duty to promote the conservation of flora and fauna dependent on the aquatic environment, as part of local action to conserve biodiversity (the variety of life on earth).

The biodiversity of the Parrett Catchment is in decline. Much of the wildlife interest is now confined to SSSIs, particularly in the Levels and Moors where there has been a dramatic decline in the numbers of breeding waders and wintering wildfowl. These losses are attributed by many to the drying out of the Moors as a result of the continued maintenance of low water tables. This has also resulted in permanent damage to the peat soils, a rapid loss of botanical interest and damage to sites of archaeological value.

The UK Biodiversity Action Plan lists key habitats and species which need protection, through Regional and Local Biodiversity Action Plans. The Action Plan for Biodiversity in the South West was published in June 1997, whilst local Action Plans are currently being developed by local authorities and others. The Agency contributes to maintaining and enhancing biodiversity through its routine work to improve water quality, river flow and air quality.

The Agency is developing National Species Action Plans and is the contact point for the following species which are known to occur in the catchment: otter, water-vole and native crayfish. We also have an important role to play in conserving water-related habitats as follows: lowland wet grassland, fen meadows

and raised mire communities, reedbeds, rhines and ditches, tufa depositing springs and headwater streams.

We will continue to promote the control of invasive plants by giving advice to landowners and controlling such plants on our own land.

Within the catchment there are twelve SSSIs with a wetland component plus many County Wildlife Sites and some Local Nature Reserves (See Map 7 River Parrett Consultation Report).

Of over-riding importance in this catchment is the lowland wet grassland resource of the Somerset Levels and Moors, the largest remaining area of this habitat in Britain. Seven of the wetland SSSIs have been designated as a Special Protection Area (SPA)/RAMSAR site of international importance. The lowest reach of the Parrett is already a SPA and RAMSAR area and is a proposed Special Area of Conservation (pSAC) under the EC Habitats Directive. They are of international importance for the numbers of waterfowl which are regularly present during winter, for the wetland plants and animals of the rhine system; and for the wet grassland habitat which makes the area one of the most important lowland sites in Southern Britain for breeding waders. Somerset is also a particularly important stronghold for unimproved grassland rich in plant and invertebrate species.

We work closely with organizations such as MAFF and English Nature over the restoration and enhancement of the wet grassland resource, and continue to help fund monitoring work to ensure the maintenance of plant and invertebrate communities.

Issue 12: The Need to Maintain and Enhance Biodiversity

Sub-Issue	Actions	Action By	Cost to Agency (£K)	Financial Year 97	98	99	00	01
The need to review water levels on the Moors, to improve conditions for wildlife, in consultation with all interested parties	12.1 Review and update our water level management and nature conservation strategy and consult with interested parties.	Agency	20	●	●			
	12.2 Produce First Stage Water Level Management Plan (WLMP) for North Moor SSSI.	Agency	See key below table	20 *b*	*d*	*d*		
	12.3 Contribute to WLMPs for the remaining SSSIs in the catchment being produced by the IDBs.	Agency	See key below table	20 *b*	*d*	*d*		
	12.4 Seek opportunities to engineer more Raised Water Level Areas (RWLAs).	Agency, MAFF, farmers	U	66 *a*	85 *a*	*c*	*c*	*c*
	12.5 Undertake a study of the impact of low winter ditch levels and produce options for action.	Agency	U	●	●			
	12.6 Continue to support monitoring to assess the effect of RWLAs on bird numbers and grassland composition. Continue our work to monitor water quality in the rhine and ditch systems of SSSIs to ensure the maintenance of favourable conservation status.	Agency	Part of 50K/pa	Ongoing				

Sub-Issue	Actions	Action By	Cost to Agency (£K)	Financial Year 97	98	99	00	01
The need to reverse the decline in species and habitat diversity	12.7 Continue to work with others to establish local biodiversity targets and monitor progress.	Agency, EN, Wildlife Trusts, RSPB, local authorities	U	Ongoing				
	12.8 Help to implement action plans for Agency contact species and for wetland habitats.	Agency	U	Ongoing				
	12.9 Promote buffer strips to improve water quality and enhance river corridor habitat diversity.	Agency	Staff time	Ongoing				
	12.10 Continue to work with highways authorities to ensure underpasses etc. for otters are installed on new roads.	Agency, local authorities, highways authorities	U	Ongoing				
	12.11 Seek to persuade MAFF to designate Somerset Levels and Moors as a signal crayfish no-go area (see page 163 of River Parrett Consultation Report).	Agency, MAFF	Staff time		●			
	12.12 We will initiate Phase 1 of the headwater streams biodiversity review and report findings. See R&D report.	Agency	2	●	●			
The need to reduce aerial deposition of nitrogen and ammonia which has a detrimental effect on wildlife particularly on the peat soils of the Somerset Moors	12.13 Set an example in reducing emissions from vehicles used on Agency business	Agency	U	Ongoing				
	12.14 Contribute to national initiatives to reduce oxides of nitrogen and sulphur emissions from power stations.	Agency	U	Ongoing				
	12.15 Ensure emissions of nitrogen and ammonia to air from major industries are reduced by means of improvement programmes agreed as part of IPC Authorisations.	Agency	U	Ongoing				
The need for channel restoration of degraded stretches for wildlife enhancement	12.16 Identify priority stretches for restoration using river corridor and habitat surveys. Seek funds to implement projects.	Agency	Staff time		●	●		
Need to restrict cattle access to streams *Note: This does not apply to rhine and ditch systems, necessarily*	12.17 We will work closely with other organisations including MAFF, IDBs and FWAG to raise awareness of the damage that can be caused by unrestricted livestock access to streams.	Agency, MAFF, IDBs, FWAG, Wildlife Trusts	U	Ongoing				

Sub-Issue	Actions	Action By	Cost to Agency (£K)	Financial Year 97	98	99	00	01
The need to reduce fish loss at sluices and other water control structures	12.18 We will investigate the extent of this potential problem and if substantiated we may need to incorporate modifications at some structures.	Agency	U		●	●		
The need to increase the number of fish refuge areas in the lowland catchment	12.19 We will identify opportunities for habitat improvement and habitat creation by working with riparian owners and other interested parties. In particular there may be opportunities to undertake this type of work during routine Environment Agency maintenance where landowners are in agreement.	Agency	U		●	●		
Good fisheries which are not designated EC Freshwater Fish Directive sites	12.20 We will review the extent of designations under the EC Freshwater Fish Directive as it applies to the Isle and its tributaries.	Agency	zero	●	●			

KEY: a Capital funding for RWLAs for North Wessex; b Budget for all WLMPs for North Wessex Area;
c Dependent on future demand; d Dependent on resolution of outstanding matters

3.3.2 Eel and Elver Fishery

Concern has been voiced by conservation groups and fishermen about the apparent decline in elver catches and abundance in the River Parrett - a noted elver fishery in a national context.

- There has been a well documented drop in the number of elvers arriving in European rivers since the early 1980s.
- Elver licences are unrestricted.
- Eels are important prey of several protected species including birds and the otter.
- Eels and elvers have a large commercial value as food and elvers as a source for farming and restocking in Europe and the Far East.
- In parallel with the concern about stock levels local residents are unhappy with the anti-social activities of some elver fishermen - in 1997 over 300 fished in the relatively short tidal stretch of the River Parrett.

Issue 13: Eel and Elver Fishery

Sub Issue	Actions	Action By	Cost to Agency (£K)	Financial Year 97	98	99	00	01
The status of elver and eel stocks (in the River Parrett)	13.1 Review of obstructions to elver migration.	Agency	2	●				
	13.2 Assessment of adult stock in routine fisheries surveys.	Agency	U	●				
Alleged decline in stock	13.3 R&D - Eel and Elver Stocks in England and Wales, their Status and Management.	MAFF, Agency	30	●				
	13.4 National Review of Licence Duties eels and elvers.	Agency	U	●				
Disturbance/ vandalism of property and structures	13.5 Liaison with police and parish councils.	police, parish councils, Agency	U	Ongoing				
Legislative changes e.g. licence limitation	13.6 As consultee contribute to MAFF Review of Salmon and Freshwater Fisheries Act.	MAFF, Agency	U	●	●			

3.3.3 Landscape

The Agency promotes the conservation of landscape, wildlife and archaeology through our work to safeguard water quality, manage water resources and provide flood defences. An important part of our work is to influence land use planners and land managers to look after rivers and wetlands sensitively. Some consultees wish us to conduct surveys of landscape on all river corridors in North Wessex but we have no funds for this work. We will enhance the landscape on those stretches where other works are being carried out for flood defence or fisheries purposes, and give general advice to riparian owners wishing to enhance their own river stretches. We have identified areas with potential for habitat enhancement (See River Parrett Consultation Report, Map 29, Page 169). Landscape improvements will form part of such enhancement.

Issue 14: The Need to Maintain and Enhance River Corridor Landscape

Issue	Actions	Action By	Cost to Agency (£K)	Financial Year 97	98	99	00	01
The need to encourage tree planting adjacent to certain reaches of the Rivers Isle and Cary, tributaries of the Parrett and lower reaches of some of the Quantock streams	14.1 We will work closely with other organisations including MAFF, IDBs and FWAG to raise awareness of the value of riverside trees. Encourage planting and natural regeneration to exclude livestock from watercourses. *Note: Tree planting can provide habitat for otters as well as providing shade which reduces the need for aquatic weed cutting, but is only possible at sites where maintenance access is not blocked and with the riparian owners agreement.*	Agency, MAFF, IDBs, FWAG, Wildlife Trusts	U	●	●	●	●	●

3.3.4 Flood Defence

Flood risk and land drainage have always affected the way we use land. By improving our control of water we have been able to make more use of river and coastal floodplain for farming or building towns. This control can take many forms: from simple channel alterations to major floodbanks and artificial washlands. Works constructed for other purposes, such as weirs, mills and bridges, have also altered the natural river system.

Better protection from floods and better drainage has improved our quality of life. However, unless properly managed, these benefits may result in other problems such as increased downstream flows and a legacy of expensive works for future generations to maintain. Changes in land use, made possible through drainage and flood defence, may also cause significant environmental damage, particularly to wetlands.

Large parts of this catchment are vulnerable to tidal and fluvial flooding as they lie below the High Water Spring Tide level and rely on engineered flood defences for an appropriate standard of flood alleviation. See River Parrett Consultation Report, table 12, page 165. Global warming and increased storminess are predicted to reduce the standard of flood alleviation. Global warming is expected to give a rise of 500 mm in 100 years but the present rate is approximately 2 mm per year. MAFF have agreed a global warming allowance of 5 mm per year should be built into the design of all new sea defence schemes, and that the design should allow further raising in the future, see Severn Estuary Joint Issues Report, May 1997, Issue C6, page 58. Any Agency 'actions' will be dealt with in our Severn Estuary Action Plan due for publication in 1998.

Today, we manage flood defences and water levels to balance the needs of all river users with the needs of the environment. The aim of the Agency is to provide effective defence for people and property against flooding from rivers and the sea; and to provide adequate arrangements for flood forecasting and warning, and where possible to manage water levels sensitively to support wetland dependent habitats and species.

Issue 15: The Need for Improved Flood Defence Practices in the Catchment

Sub-Issue	Actions	Action By	Cost to Agency (£K)	Financial Year 97	98	99	00	01
The need to prioritize flood defence maintenance and improve efficiency and effectiveness	15.1 Develop the Flood Defence Management System (FDMS) for the Somerset Levels and Moors.	Agency	50	●	●			
	15.2 Develop a model for the Parrett/Tone system.	Agency	20		●			
	15.3 Use FDMS to draw up prioritized list of defence maintenance requirements and start implementation of the resulting programme.	Agency	Ongoing		●	●	●	●
The need for more efficient operation of the Parrett Relief Channel (Sowy River)	15.4 Using our computer model and data from new gauges produce an options' report and present to IDBs, EN, conservation groups and other interested bodies.	Agency, EN, IDBs, Somerset Wildlife Trust	10		●			

Sub-Issue	Actions	Action By	Cost to Agency (£K)	Financial Year 97	98	99	00	01
Need to establish a justifiable de-silting frequency below Burrowbridge	15.5 Use the computer model to investigate the effect of channel shape on river levels and produce an options report.	Agency	5	●				
The need to improve the efficiency and effectiveness of pumping station operation	15.6 Introduce a scheme of planned maintenance and capital refurbishment.	Agency	30	●	●	●	●	●
The need to protect urban areas to current standards (usually 1 in 100 year flood event)	15.7 Undertake a full catchment drainage model and develop appropriate surface water drainage policies for urban areas.	Agency	35		●	●		
Review the effects of intensive routine maintenance on aquatic biota, using results of recent study	15.8 Where river-reaches are over-serviced, relax maintenance regime to retain marginal vegetation and avoid disturbing the bed. Where this is not possible, consider re-modelling channel to create marginal habitats and greater capacity. *Note: The lessons learnt from the August 1997 flooding will need to be taken into account.*	Agency	U		●			

3.3.5 Recreation

The Agency aims to develop the amenity and recreational potential of inland and coastal waters and associated land, where appropriate.

Issue 16: The Need to Take Account of Recreation in Agency Work

Issue	Actions	Action By	Cost to Agency (£K)	Financial Year 97	98	99	00	01
The need to provide for recreational use of Agency owned land	16.1 Produce Conservation and Recreation Management Plans for Agency land in this catchment. *Note: At present, plans for the Westport Canal and the Huntspill River have been drafted.*	Agency	5 pa	●	●	●		

3.4 Development Pressure

It is estimated that the catchment population will rise from 196,000 (1991 Census) to approximately 218,000 by 2001. The associated housing, industry and infrastructure development will undoubtedly have some impact on the environment.

There will be a greater demand for public water supply. We expect the water supply companies to manage their existing resources effectively and to implement water demand management practices to make best use of water. This will include leakage control and domestic metering where appropriate. Providing these expectations are realized and WWSL can continue to transfer resources from areas of existing surplus then the increase in demand from such development can be met without the need for any major new resource development in the Structure Plan period up to 2011.

There will be an increase in sewage load but we will protect river quality by enforcing existing consents. WWSL can make charges on new developers to expand sewage treatment works (STWs) and improve treatment standards.

New development will give rise to an increase in household waste. At present each household produces 1.15 tonnes of waste per year. However, household waste is only 5% of the total waste stream. Predictions of increased waste will be influenced by developing concerns over current waste management practices and moves towards reducing waste at source and choosing more sustainable methods such as reuse, recycling and composting. The new Packaging Producer Responsibility Regulations will have an impact on waste production.

Expansion of industry can lead to an increase in polluting discharges to water and air, see Issue 4 Impact of Industrial Discharges on Water Quality and Issue 10 Emissions to Air from UCB and Crosby Ltd.

Associated infrastructure such as new roads have an impact, particularly on the water environment.

Provision of an additional 50,000 dwellings in Somerset to 2011 will have implications for green field site development which the Agency, as advisors to the local planning authorities, must ensure is not itself at risk from flooding, or a risk to others. We are producing a working handbook *called "A Strategic Environmental Plan"* outlining the environmental issues in North Wessex and also the potential opportunities for addressing all the major environmental issues and our role in sustainable development. The handbook is principally aimed at local planning authorities in order to feed into their forward planning process at the earliest stage. In addition we provide advice and are in the process of supplying indicative flood maps for a 1 in 100 year flood event, produced under Section 105, Water Resources Act, 1991.

We need to take account of increased runoff from new developments and to this end we are able.to computer model the impact on drainage and hydrology on development proposals.

A major challenge posed by such development is to maintain the biodiversity and landscape character of the catchment, see Issue 12 The Need to Maintain and Enhance Biodiversity.

Issue 17: Development Pressure

Sub Issue	Actions	Action By	Cost to Agency (£K)	Financial Year 97 98 99 00 01
The need for strategic development planning	17.1 Work in partnership with local authorities to improve environmental protection policies and work towards more sustainable development.	Agency, local authorities	U	Ongoing
The increasing demand for public water supply	17.2 Work with WWSL to ensure that future needs for water supply and disposal can be sustained without unacceptable impact on the environment. *Note: See Section 3.2 Water Resources for full list of actions.*	See Section 3.2		
The increase in waste production	17.3 Survey waste arisings in the Plan area. *Note: See Issue 8 'The Need for Accurate Data on Waste Arisings' for action.*	See Issue 8		
The need for early involvement in planning new road schemesOngoing	17.4 Seek the earliest possible discussions with the local planning authorities and new road developers to advise on the best environmental option for each scheme.	Agency, local authorities	U	Ongoing

4. Appendices

4.1 Appendix 1 River Parrett Catchment Steering Group

Name	Representing
T Noall	Taunton Deane Borough Council
M Bowden	UCB Cellophane Ltd, Bridgwater
R Bradford	English Nature
S Chedzoy	Chairman Stan Moor District Drainage Board
J Comer	Country Landowners Association
J Eastwood	Wessex Water Services Ltd
R England	National Farmers Union
J Greenslade	West Dorset District Council
K Haywood	C W Pittard & Co Ltd, Yeovil
M Hellings	Haul-Waste Ltd, Taunton
J Hollington	South Somerset District Council
P Lee	Harbour Master (Sedgemoor District Council)
A Lennox	Recreation
J Mathrick	Fisheries interest
D Rodwell	Sedgemoor District Council
D Taylor	Somerset County Council
R Dommett	British Waterways
D Westbrook	Somerset Wildlife Trust

4.2 Appendix 2 Organizations Responding to the Public Consultation

National Organizations

Clean Rivers Trust
The Rambler's Association
The Forestry Authority
Joint Nature Conservation Committee
English Nature
Ministry of Agriculture, Fisheries and Food
British Canoe Union
The Royal Town Planning Institute
Farming and Wildlife Advisory Group
OFWAT
The National Trust
Royal Society for the Protection of Birds
National Farmers Union
English Heritage

Regional and Local Organizations

Wyvern Waste Services Ltd
Wessex Water Services Ltd
Langport District Drainage Board
Chedzoy Separate District Drainage Board
Kings Sedgemoor and Cary Valley Drainage Board
Somerset Wildlife Trust
English Sports Council South West

Local Authorities

Somerset County Council
Sedgemoor District Council
South Somerset District Council
West Dorset District Council
West Somerset District Council
Taunton Deane Borough Council
North Petherton Town Council
Bawdrip Parish Council
Buckland St Mary Parish Council
Cary Moor Parish Council
Curry Rivel Parish Council
Donyatt Parish Council
Parrett & Axe Parish Council
Nether Stowey Parish Council

A further five written responses were also received from members of the public.

A copy of the summary report can be obtained by writing to Alan Turner, Team Leader LEAPs (see address inside front fold-out map).

4.3 Appendix 3 Guide To Consultation Report And Action Plan Issues

	Former Consultation Report Issue	Issue Number in this Action Plan
1.	Impact of septic tanks on water quality	6.
2.	Impact of farming activities on water quality	1.
3.	Impact of STWs on water quality	2.
4.	Unknown causes of non-compliance with River Quality Objectives	3.
5.	Impact of industrial discharges on water quality	4.
6.	Nutrient enrichment and effect of algae on water quality	5.
7.	Low dissolved oxygen levels in the groundwater contributing to river flow	Omitted - natural phenomenon
8.	Inappropriate location of monitoring point	6.
9.	Non-compliance with EC Dangerous Substances Directive	3.
10.	Non-compliance with Freshwater Fish Directive	1., 5.
11.	Non-compliance with the Surface Water Abstraction Directive	1.
12.	The need to review the consents for discharges to designated conservation areas	7.
13.	Biological indication of degraded water quality	6.
14.	Optimization of water resources on the Somerset Levels	11.
15.	Lack of a gauging station in the Parrett lower reaches	11.
16.	Reduced flow downstream of Ashford Reservoir	11.
17.	Low flow abstraction problems from the King's Sedgemoor Drain	5.
18.	Impact on water quality of River Yeo abstraction	11.
19.	Securing future public water supplies in the Somerset Supply Zone	Omitted - routine work
20.	The need to review water levels on the Moors	12.

21.	The need for Water Level Management Plans	12.
22.	The need for flexible operation of the penning of main rivers	5.
23.	The need for more RWLAs	12.
24.	The decline in biodiversity	12.
25.	The need to conserve springline mires and headwater stream habitats	12.
26.	The need for a Flood Defence Management System	15.
27.	Identification of flood problems	15.
28.	The need for improved efficiency and effectiveness in maintenance work	15.
29.	The need for channel restoration in degraded stretches	12.
30.	The need for efficient Parrett Relief Channel operation	15.
31.	The need to establish a justifiable de-silting frequency below Burrowbridge	15.
32.	River Parrett Tidal Barrage	Omitted - no actions planned
33.	Pumping station operation	15.
34.	The need for planned pumping plant maintenance	15.
35.	Floodbank overtopping	15.
36.	The need for a strategic review of bank maintenance	15.
37.	The need to provide for recreational use of Agency owned land	16.
38.	The need to conserve wetland archaeology	Text entry
39.	The need for more information and data on river valley landscapes	Omitted - no action planned
40.	The need for a forum to develop a strategy to improve the visual amenity of river channels	Omitted - no resources
41.	The need to issue flood warnings at least 2 hours in advance of flooding	Text entry
42.	The need for a regional waste strategy	Omitted - routine work
43.	Need for reduction in waste production and the proportion going to landfill	9.

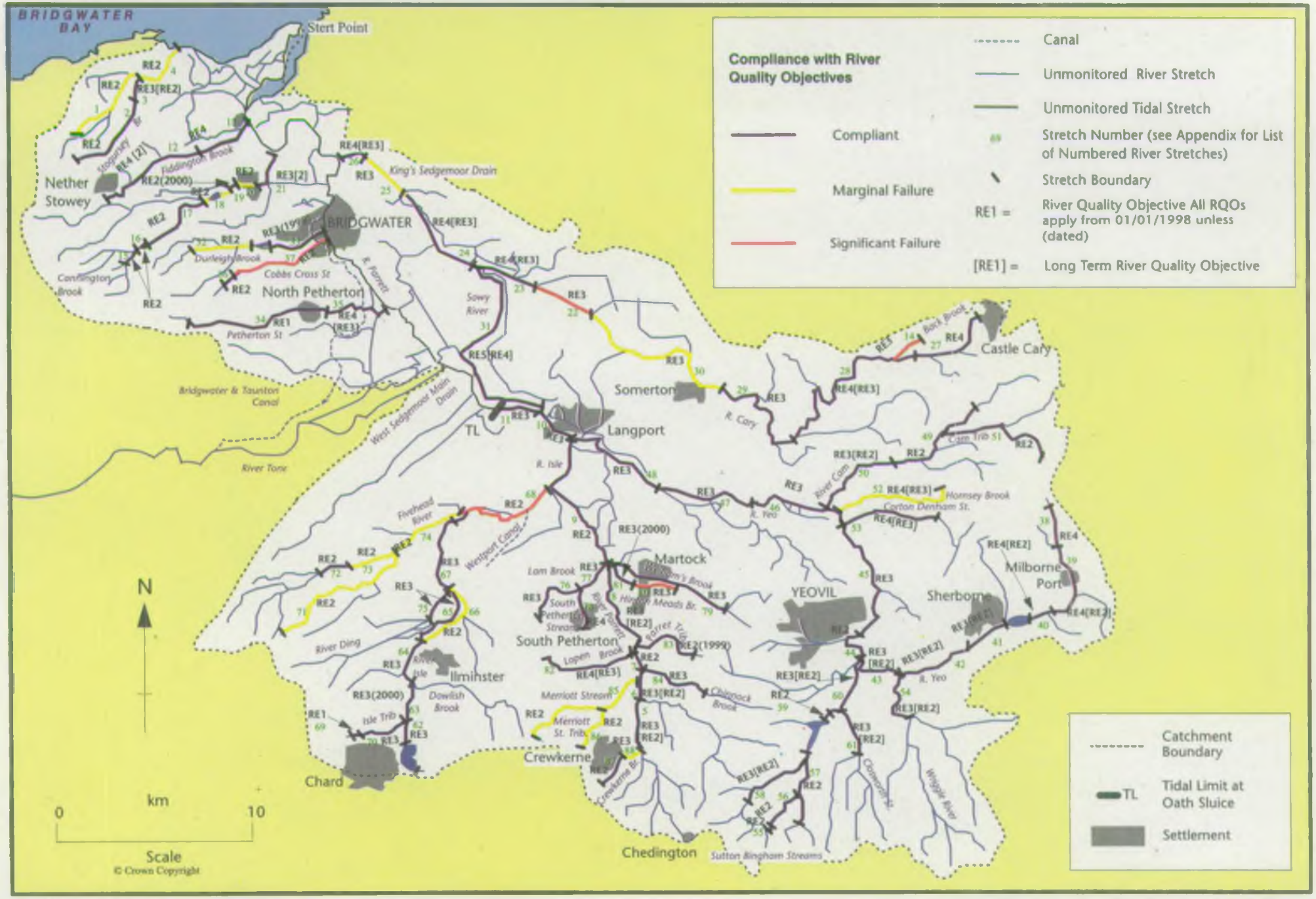
4.4 Appendix 4 List of Numbered River Stretches

River	Stretch Name	Stretch No.	River Quality Objective (RQO)	Long Term RQO
Stogursey Brook	Stringston - Confluence with Dodington Tributary	1	2	
	Dodington - Stogursey	2	2	
	Stogursey - Confluence with Stringston Tributary	3	3	2
	Stringston/Dodington Tributary Confluence - Sea	4	2	
Parrett	Confluence with Crewkerne Brook - Confluence with Broad	5	3	2
	Confluence with Broad - Confluence with Chinnock Bk	6	3	2
	Confluence with Chinnock Brook - Confluence with Lopen Bk	7	2	
	Confluence with Lopen Bk - Confluence with Wellhams Brook	8	3	2
	Confluence with Wellhams Brook - Confluence with Yeo	9	2	
	Confluence with Yeo - Sowy	10	3	
	Confluence with Sowy - Oath Lock (Estuary)	11	3	
Fiddington Brook	Source - Hornhill	12	4	2
	Hornhill - Confluence with Tidal Parrett	13	4	
Back Brook	Downstream Dimmer Waste Disposal - Confluence with Cary	14	3	
Cannington Brook	Lower Aisholt - Upstream Hawkridge Reservoir	15	2	
	Upstream Hawkridge Reservoir - Downstream Hawkridge Res	16	2	
	Downstream Hawkridge Reservoir - Ashford Reservoir	17	2	
	Ashford Reservoir - Blackmore Farm	18	2	
	Blackmore Farm - Bradley Green	19	2 (2000)	
	Bradley Green - Cannington	20	2	
	Cannington - Confluence with Tidal Parrett	21	3	2

River	Stretch Name	Stretch No.	River Quality Objective (RQO)	Long Term RQO
King's Sedgemoor Drain	Henley - Confluence with 18 Feet Rhine	22	3	
	Confluence with 18 Feet Rhine - Confluence with Sowy	23	4	3
	Confluence with Sowy - Bawdrip	24	4	3
	Bawdrip - Dunball	25	3	
	Dunball 1 - Confluence with Tidal Parrett	26	4	3
Cary	Source - Lovington	27	4	
	Lovington - Higher Farm	28	4	3
	Higher Farm - Somerton Randle	29	3	
	Somerton Randle - Henley	30	3	
Sowy	King's Sedgemoor Drain - Parrett	31	5	4
Durleigh Brook	Pightley - Upstream Durleigh Reservoir	32	2	
	Upstream Durleigh Reservoir - Confluence with Tidal Parrett	33	3 (1998)	
Petherton Stream	Source - North Petherton	34	1	
	North Petherton - Confluence with Tidal Parrett	35	4	3
Cobbs Cross Stream	Below Millwood F/Fm - Goathurst downstream Knoll F/Fm	36	2	
	Goathurst downstream Knoll F/Fm - Confluence with Parrett	37	2	
Yeo	Charlton Horethorne STW - Milborne Wick	38	4	
	Milborne Wick - Milborne Port	39	4	2
	Milborne Port - Upstream Sherborne Lake	40	4	2
	Upstream Sherborne Lake - Sherborne STW	41	3	2
	Sherborne STW - Confluence with Wriggle	42	3	2
	Confluence with Wriggle - Confluence with Sutton Bingham Stream	43	3	2
	Confluence with Sutton Bingham Stream - Yeovil STW	44	2	
	Yeovil STW - Confluence with Corton Denham Stream	45	3	
	Confluence with Corton Denham Stream - Northover	46	3	
	Northover - Little Load	47	3	
	Little Load - Confluence with Parrett	48	3	
Cam	North Cadbury STW - Queen Camel	49	2	
	Queen Camel - Confluence with Yeo	50	3	2
Cam Trib	Source - Confluence with Cam	51	2	
Hornsey Brook	Source - Little Marston			
	Little Marston - Confluence with Yeo	52	4	3
Corton Denham Stream	Rimpton - Confluence with Yeo	53	4	3
Wriggle	Confluence with Beer Hackett Stream - Thornford STW			
	Thornford STW - Confluence with Yeo	54	3	2
Sutton Bingham Stream	Halstockleigh Stream - Corscombe Court	55	2	
	Corscombe Court - Confluence with Adams Green Tributary	56	2	
	Confluence with Adams Green Trib - Upstream Sutton Bingham Reservoir	57	2	
	Higher Halstock - Sutton Bingham Reservoir	58	3	2
	Downstream Sutton Bingham Reservoir - Downstream Sutton Bingham Water Treatment Works	59	2	
	Downstream Sutton Bingham WTW - Confluence with Yeo	60	3	2

River	Stretch Name	Stretch No.	River Quality Objective (RQO)	Long Term RQO
Closworth Stream	Princes Place - Confluence with Sutton Bingham Stream	61	3	2
Isle	Upstream Chard Reservoir - Chard STW	62	3	
	Chard STW - Dunpole Farm	63	3 (2000)	
	Dunpole Farm - Upstream Ilminster Bifurcation	64	3	
	Upstream Ilminster Bifurcation - Downstream Ilminster Bifurcation	65	2	
	Upstream Ilminster Bifurcation - Downstream Ilminster Bifurcation	66	2	
	Downstream Ilminster Bifurcation - Fivehead STW	67	3	
	Fivehead STW - Confluence with Parrett	68	2	
Isle Tributary	Pudleigh Mill F/Fm - Combe St Nicholas STW	69	1	
	Combe St Nicholas STW - Confluence with Isle	70	3	
Fivehead	Blackwater - Confluence with Hatch Green Tributary	71	2	
	Hatch Green - Hatch Beauchamp	72	2	
	Hatch Beauchamp - Confluence with Blackwater Tributary	73	2	
	Hatch Green/Blackwater Trib Confluence - Conf with Isle	74	2	
Ding	Ilton - Confluence with Isle	75	3	
Lambrook Brook	Shepton Beauchamp - Confluence with South Petherton Stream	76	3	
	Confluence with South Petherton Stream - Conf with Parrett	77	3	
South Petherton Stream	Source - Confluence with Lamb Brook	78	4	
Wellhams Brook	Montacute - Confluence with Parrett	79	3	
Hinton Meads Brook	Fosseway - Hurst	80	3	
	Hurst - Confluence with Wellhams Brook	81	3 (2000)	
Lopen Brook	Easterdown Hill - Confluence with Parrett	82	4	3
Parrett Tributary	Parrett Tributary Bagnell Farm - Confluence with Parrett	83	2 (1999)	
Chinnock Brook	East Chinnock - Confluence with Parrett	84	3	
Merriot Stream	Upstream Hinton Park Farm - Confluence with Parrett	85	2	
Merriot Stream Tributary	Maincombe - Confluence with Merriot Stream	86	2	
Crewkerne Brook	Henley - Crewkerne	87	2	
	Crewkerne - Confluence with Parrett	88	3	

Map 2 - Compliance with River Quality Objectives (River Ecosystem Classification 1996)



Information correct as of November 1997

map 2

Fold out for Map 2
Compliance with River Quality Objectives (River Ecosystem Classification 1996)

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