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THE TAME CATCHMENT MANAGEMENT PLAN

CONSULTATION REPORT SUMMARY
JANUARY 1996



NRA

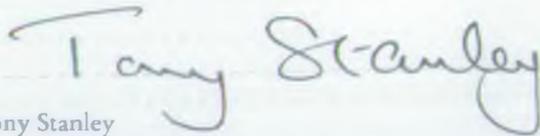
*National Rivers Authority
Severn-Trent Region*

FOREWORD

The National Rivers Authority's aims are to conserve and enhance the natural water environment and to reduce the risk of flooding. In our role as 'Guardians of the Water Environment', we are committed to ensuring the sustainable development of the region's river catchments. To help us achieve this, we are producing a catchment management plan for the River Tame.

This booklet is a summary of the Consultation Report. The Tame catchment is described and we identify the problems and opportunities which face the catchment. We call these issues and 29 have been highlighted, which we think need to be considered if the water environment is to be improved. This is the beginning of the catchment planning process and we want your views and comments.

After we have considered everybody's comments we will produce an action plan for the next five years. This plan will be implemented by the Environment Agency, the successor to the NRA, which will be formed on the 1st of April 1996.

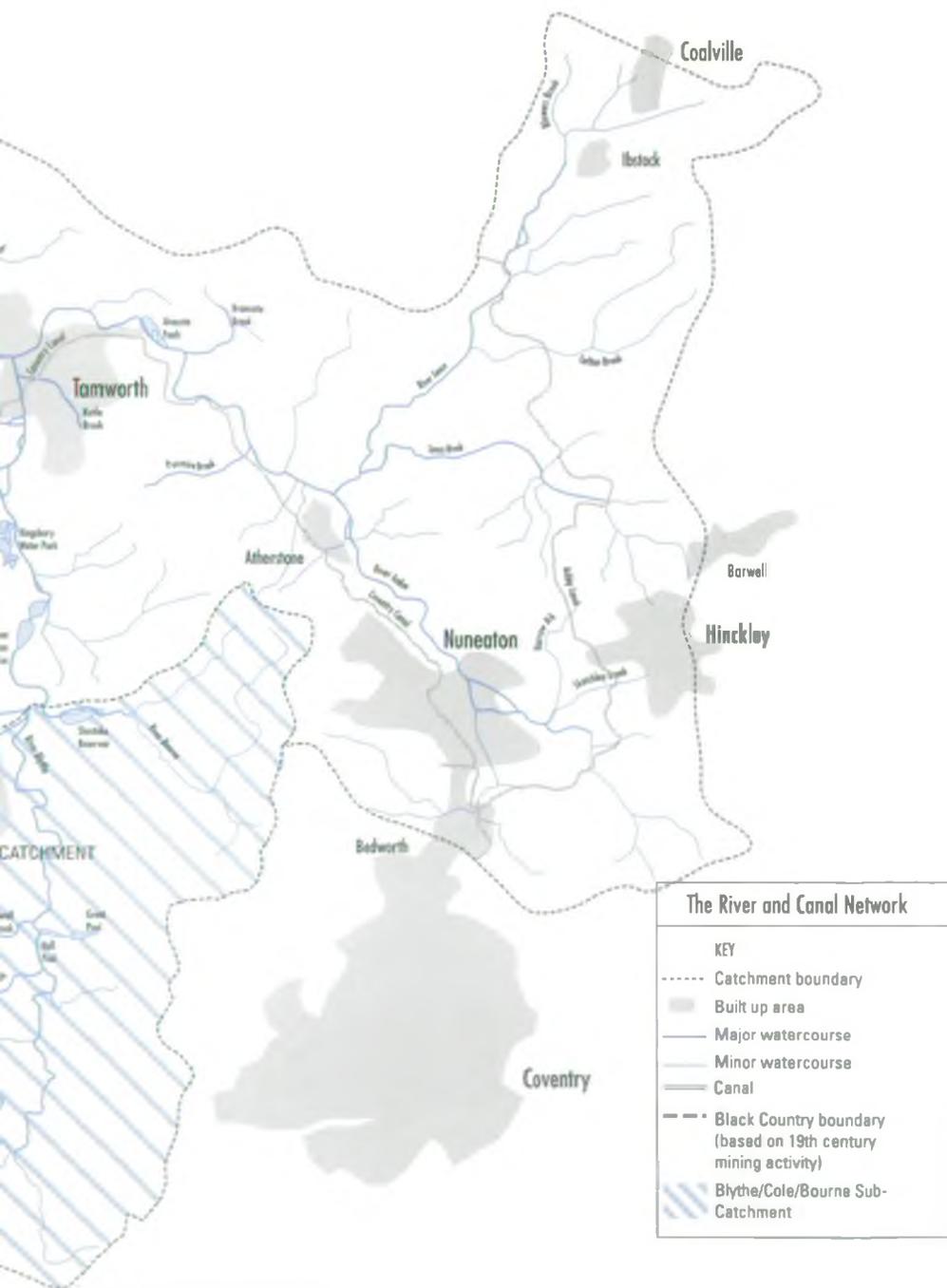


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Your Views Count

THE AIMS OF THIS BOOKLET ARE:

- 1) to tell you our vision and proposals for the Tame catchment,
- 2) to ask you to tell us your views & comments.

WHAT WILL THE NRA DO IN REPLY TO YOUR VIEWS & COMMENTS?

We will:

- reply to you in writing
- publish a report summarising everybody's comments
- take your views into account and change our Action Plan as appropriate.

HOW CAN YOU TELL US YOUR VIEWS & COMMENTS ?

By answering the quick questionnaire in the centre of this booklet, or by writing to us. Please use the freepost envelope provided at the back of this booklet. Following the launch of the Consultation Report on the 16th and 17th of January 1996 the consultation period will run until the 31st of March 1996.

If you want more copies of this booklet or need more information, please contact Jonathan Jenkin, Catchment Planning Officer, Upper Trent Area. At Sentinel House, Wellington Crescent, Fradley Park, Lichfield, WS13 8RR (Tel. 01543 444141).

ENVIRONMENT AGENCY



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Your Views Count

INTRODUCTION

THE TAME CATCHMENT

This catchment plan is about the River Tame, its tributaries and the land which drains to it. This includes most of the West Midlands conurbation (Birmingham, Sandwell, Walsall and parts of Wolverhampton, Solihull and Dudley) and areas of Staffordshire, Warwickshire and Leicestershire. The map on the fold-out cover shows the main features of the catchment.

Tributaries on the upper reaches of the River Tame include the River Rea, the Hockley, Plants, Darlaston, Ford and Tipton Brooks. On the



The River Rea, Digbeth, Birmingham

lower reaches, the tributaries include the Black/Bourne Brook, the River Anker and the River Sence. The catchment also includes the Birmingham Canal Navigation and the Birmingham and Fazeley, Coventry, and Ashby Canals. A catchment plan for the Rivers Blythe, Cole and Bourne was produced in 1994.

The population in the catchment in 1991 was 1.7m, of which over 80% live in the West Midlands conurbation. Over recent decades the population of the conurbation has declined but there has been a growth in the areas around Lichfield, Tamworth, and Hinckley. Over 40% of the catchment is urban.

The West Midlands is an important manufacturing, engineering, and metal finishing region. Birmingham is a major administrative and financial centre, and England's second city. Since the early 1980s, when the West Midlands economy went through major restructuring, a lot of effort has gone into revitalising older industrial areas.

THE AIMS OF THIS PLAN ARE TO:

- Focus attention on the Tame catchment.
- Involve everyone who is interested in the future well being of the catchment.
- Balance the competing requirements and interests of everyone who uses the water environment.
- Agree a vision for the catchment which will help to guide all our activities over the next 10 to 20 years.
- Establish a strategy and plan of action for managing and improving the water environment over the next five years.

For the potential of this catchment to be realised, we need the commitment and enthusiasm of others. To achieve a shared vision, we need to work in partnership with all those who are interested in this large and important catchment.



Alvecote Pools on the River Anker, near Tamworth

THE NRA'S VISION FOR THE TAME CATCHMENT

A RIVER UN-NOTICED

"Grey Willows whispered by the Rea, where lovers dreamt and children played in clean fields on a summers day".

Harry Reeves (Walking the River Rea, 1989) from a pictorial map of Birmingham 1730.

The River Rea is an important tributary of the River Tame and flows through the centre of Birmingham. Largely un-noticed today, the River Rea and the River Tame were once well known for their fisheries and valued by local people.

For over 100 years, industrialisation and a poor sewerage system caused gross pollution of the rivers and canals. Many of the upper reaches of the river system were seen only as a means of removing industrial waste, untreated sewage and the run-off from factories, houses and roads. The pollution killed all life in the main river and seriously polluted the River Trent for many years. The River Anker and its tributaries were not so severely polluted.

There have been major improvements in water quality, mainly due to investment in the sewerage system since the 1960s, and greater control of industrial discharges. However, the legacy of the past remains, in the form of contaminated land, polluted run-off from roads and factory yards, sewer overflows, industrial waste water, and a river system that is largely un-noticed by the people who live within its catchment.

A VALUED FUTURE

The NRA's vision for the catchment is of a diverse and sustainable water environment that is valued by local people. The River Tame can never again be the clear trout stream it was in 1730, but it can be much more than it is today.

THE NRA'S KEY OBJECTIVES FOR THE TAME CATCHMENT ARE TO:

- Create and improve river corridors in urban areas, by;
 - making rivers and canals the focus for redevelopment,
 - setting new development back from the river bank,
 - opening up culverted (covered) watercourses,
 - promoting tree and shrub planting,
 - creating channel features to improve wildlife habitat,
 - developing public paths along rivers, including the River Tame Walkway.
- Ensure the effective clean-up of contaminated land.
- Reduce the effects of pollution from urban run-off.
- Maintain and where necessary improve water quality in rivers and canals, by addressing the problems of combined sewer overflows, sewage effluent discharges, industrial discharges, and pollution from contaminated land, spoil heaps and farms.
- Protect and enhance existing nature conservation habitats and increase the diversity of the catchment.
- Seek to protect the environmental quality of canals, and support where appropriate, the building of new canals.
- Ensure that current levels of protection from flooding by the River Tame are maintained, and enhanced where necessary. Provide adequate arrangements for flood forecasting and warning.
- Support initiatives to increase water based recreation where appropriate.
- Assess the effect on the water environment of rising groundwater in Birmingham.
- Manage water resources, particularly the Lichfield aquifer, to maintain and enhance the water environment while meeting the needs of the catchment.

CATCHMENT OVERVIEW

A SHORT HISTORY OF THE CATCHMENT

The industrial revolution marked the beginning of a decline in the quality of the River Tame which, despite brief periods of improvement, continued for over 100 years. The River Tame was polluted by the thousand trades of the Black Country and from the sewage of a rapidly growing population. The first recorded fish kill from pollution was in 1854, and the last salmon in the River Tame was seen in 1876. In 1945 pollution was killing all life in the River Tame and in the River Trent as far as Burton upon Trent.

During the late 1960s the drainage and river authorities began to improve the quality of the rivers. Their first priority was to improve the treatment of sewage and industrial waste by investing in the sewerage

system of the West Midlands.

This investment prevented over 100,000 cubic metres (22 million gallons) of untreated sewage from reaching the river each day. The replacement of town gas with natural gas and a reduction in heavy industry, combined with better pollution control has also played a part in improving water quality.



Lea Marston Purification Lakes

Whilst these improvements solved the worst pollution, a lot of pollution continued to come from thousands of small sources, which were difficult to control. The Trent River Authority decided to treat the whole river and after successful pilot projects, built the Lea Marston Purification Lakes.

THE LEA MARSTON PURIFICATION LAKES

The Lea Marston lakes are unique in the UK and are operated by the NRA. The River Tame passes through the shallow lakes which slow its flow, allowing the polluting material to settle out. This is removed and pumped to Coleshill Sewage Treatment Plant. Tonnes of rubbish floating down the river are also collected every week. The lakes improve the quality of the River Tame and benefit the River Trent and even the North Sea, into which it eventually flows (Issue 2).

THE QUALITY OF WATER IN RIVERS AND CANALS

The NRA monitors the quality of water in rivers and canals and controls the discharge of sewage effluent and industrial waste to them. Sewers are the responsibility of Severn Trent Water Ltd. In the Tame catchment the NRA has over 150 regular monitoring points on rivers and canals, checks the quality of discharges, and takes samples after pollution incidents. In all we analyse over 5000 samples each year.

The quality of water in the rivers of Birmingham and the Black Country is generally poor.

Downstream of Lea Marston, the River Tame is of fair to good quality. The Rivers Anker and Sence which drain the eastern, more rural parts of the catchment are generally good quality.



Discharge from Minworth Sewage Treatment Plant, Water Orton

The River Tame contains a high proportion of waste water from sewage works and factories. At Lea Marston, sewage effluent and industrial waste account for 55% of the average flow, and 90% in dry weather. The river also suffers pollution from urban run-off and contaminated land.

Urban run-off

Rivers in urban areas receive rainwater draining from the surrounding roads, buildings and factory yards, and in some areas they also receive overflows from combined sewers. This is called urban run-off. It is contaminated by dilute sewage and the dust, dirt, oil, rubber and other debris that has collected since it last rained. This pollutes the river in several ways, but most importantly it consumes the water's oxygen. If the oxygen levels fall low enough, fish and other animals will be killed. Urban run-off remains a problem in the catchment, particularly in summer, and it is highlighted in Issue 1.

Contaminated land

In parts of the catchment, particularly Birmingham and the Black Country, the land and the groundwater is contaminated by chemicals left by previous uses; such as old tips, industrial sites and mine workings. Water from these sites continues to cause pollution of rivers in the catchment (Issues 9 & 11).



South Staffordshire Water plc's Pipe Hill Pumping Station

WATER RESOURCES

The people, industry, agriculture and canals of the catchment use a large amount of water. It is supplied from rivers and underground water resources. The underground resources are the most important source for public water supply and industry, whilst the rivers in the lower parts of the catchment provide

water for agriculture. Birmingham also receives large amounts of water for public supply from the Elan Valley Reservoirs in Mid-Wales and from the River Severn.

The NRA controls the use of water resources and protects them from pollution. To take water from rivers or underground resources usually requires an Abstraction Licence, issued by the NRA. Generally, the west of the catchment has sufficient water resources to allow new licences to be granted, while in the east and north, water resources are

more restricted.

Underground water is held in rocks which contain tiny spaces and cracks. These rocks are called aquifers and the most important in the catchment is the Triassic Sherwood Sandstone which occurs in a band from Longbridge to Lichfield and underlies much of Birmingham.

Aquifers around Lichfield are used to provide public drinking water to areas of Staffordshire and the Black Country. Rates of abstraction have increased to the point that, in some parts of the aquifer, the amount of water being abstracted is greater than the amount being replaced by rainfall. This has led to some watercourses drying up in summer. The NRA is working closely with South Staffordshire Water plc to develop alternative supplies (Issue 12).

The Lichfield aquifer has been significantly affected by rising nitrates, as a result of changing agricultural practices. It has now been designated as a Nitrate Vulnerable Zone, which will require farmers to control carefully their use of nitrate based fertilisers (Issue 13).

FLOOD DEFENCE

Flood defences have been constructed in many parts of the catchment, especially in urban areas. They include the extensive flood banks on the River Tame at Tamworth, Whitacre Heath, Water Orton and in the conurbation at Witton, Hamstead, Bescot and Oldbury. On the middle reaches of the River Tame and on its Oldbury Arm, flood balancing areas have been constructed at Ocker Hill, Sheepwash, Bescot, Sandwell and Perry Hall Playing Fields. At Nuneaton, a flood relief channel has been built on the north eastern side of the town to divert flood flows on the River Anker, bypassing its historic route through the centre of the town where many serious floods have occurred.



River Tame, Lady Bridge, Tamworth

Some areas are not protected from flooding and the NRA is unable to

provide defences where the benefits of doing so do not justify the costs. The NRA operates a flood warning service to cover these areas which include parts of the rivers Tame, Anker and Sence. Extension of the flood warning system is being considered (Issue 17).

FISHERIES AND ANGLING

The NRA is responsible for monitoring, improving and developing fisheries in rivers and canals. We undertake surveys of fish stocks and issue rod licences.

In the upper reaches of the River Tame above Lea Marston there are very few fish. There are no permanent stocks of major coarse fish species, although there are temporary migrations from the River Blythe.



Zander

Below Lea Marston there are permanent coarse fish stocks. Good mixed populations of chub, dace and roach provide some excellent sport, particularly in the vicinity of Tamworth. However, the fish population is at risk from

occasional severe pollution incidents coming from Birmingham and the Black Country (Issue 2).

The River Anker supports a high quality mixed coarse fishery, although weed growth is causing problems for anglers (Issue 26). The River Sence also has a good stock of chub and dace in the lower reaches and in its upper reaches it is managed as a trout fishery.

There is a lot of fishing on ponds, lakes and canals. These waters provide a variety of angling opportunities for coarse fishermen. However, zander are now present in some canal stretches, and the NRA is concerned about the effects that these fish may have on the stocks of other coarse fish species (Issue 27).

CONSERVATION AND RECREATION

The rivers, ponds, lakes and canals in the catchment are an important part of the natural environment and are valued for nature conservation and recreation.

Of the 28 nationally important Sites of Special Scientific Interest, 16 have a wetland interest. There are also 128 locally designated Sites of Importance for Nature Conservation with wetland interest.

Within Birmingham and the Black Country a lot of the wildlife value of the rivers and their corridors has been destroyed by past pollution, urban development and flood defence works. However, there are some areas of value and because they are in an urban area, where wildlife is scarce, they can be very valuable assets. Public access to the riverbank is generally poor, but the extensive canal network provides a system of tow paths, some of which can also be used by cyclists. The NRA aims to promote and improve river corridors for wildlife and public amenity, including the creation of public riverside footpaths such as the Tame Walkway, from Willenhall to the River Trent (Issues 19 & 20).

The Tame catchment provides relatively few water based recreational facilities for such a large population. Pollution restricts the use of the rivers for angling, canoeing and other active water sports. However, there are many ponds, lakes and canals which are used for recreation.

In the middle and lower reaches of the River Tame, there are a lot of flooded sand and gravel workings, such as those at Kingsbury Water Park, which have become important for their birdlife, and are popular for water based recreation. The NRA is part of a group which is developing a plan for the middle Tame valley, to maximise the opportunities for conservation and recreation, and to avoid conflict between these interests (Issue 21).



River Tame enhancement near the M6, Walsall

The rivers Anker and Sence provide generally good wildlife habitats. The River Anker flows through Alvecote Pools, which are designated as a Site of Special Scientific Interest (Issue 24).

NAVIGATION AND CANALS

There are no navigable rivers in the catchment but there are over 200km of canals. Canals are the responsibility of British Waterways but the NRA monitors their water quality, controls discharges to them and has duties in relation to fisheries. Generally, the Birmingham Canal Navigation suffers from poor water quality and a historic legacy of pollution (Issue 7). The Ashby Canal and parts of the Wyrley and Essington Canal are better quality and support good fish and insect populations. The Ashby Canal is a Site of Special Scientific Interest.

Canals are being used as a focus for regeneration and Gas Street Basin in Birmingham is a good example of what can be achieved. The NRA supports the improvement of canal and river corridors as part of redevelopment (Issue 20).

Extensions to the network are being pursued by local canal restoration groups, with proposals to recreate the Lichfield Canal and extend the Ashby Canal as far as Moira (Issue 14).



Gas Street Basin

ISSUES, OPTIONS AND ACTIONS

We hope that after reading the brief description of the catchment, you will agree that there are many problems but also many opportunities. We have called these issues and on the following pages we describe them and suggest options or actions for their resolution.

The NRA is responsible for many of the options and actions but we have also identified other organisations. We aim to work with these organisations, and individuals, to solve the problems and exploit the opportunities.

We have identified the issues, options and actions by:

- comparing the current state of the catchment with our targets,
- consulting informally with selected organisations,
- considering pollution incidents and flooding complaints,
- using the local knowledge of NRA staff.

These are our initial ideas, and we want you to contribute by telling us what you think is important, including any suggestions for issues, options and actions. Following the end of the consultation period (31st March 1996) we will produce an Action Plan taking into account everyone's comments.

Abbreviations

Abbreviations used in the tables are set out below:

AMP2	Asset Management Programme 2 (1995-2000)
AMP3	Asset Management Programme 3 (2000-2005)
BW	British Waterways
CSO	Combined sewer overflow
DoT	Department of Transport
EN	English Nature
LA	Local Authority
LEA	Local Education Authority
LPA	Local Planning Authority
MAFF	Ministry of Agriculture Fisheries and Foods
OFWAT	Office of Water Services
SC	Sports Council
SSW	South Staffordshire Water plc.
STW	Severn Trent Water Ltd.

Issue: 1 Urban run-off and the de-oxygenation of surface water

Urban run-off, particularly in summer, following heavy localised storms, can pollute rivers. The reduction in the water's oxygen that this causes, can lead to fish kills. In July 1995 there was a serious pollution of the River Tame, which killed 90% of the fish downstream of Lea Marston and also severely affected the River Trent. We have investigated this incident and are currently studying how the effects of future incidents can be reduced.

OPTIONS/ACTIONS	RESPONSIBILITY	BENEFITS	CONSTRAINTS
1.1 General Assess the pollution from urban run-off.	NRA.	Better understanding of the problem.	Complexity of the task. Staff resources Cost.
1.2 Road Run Off 1.2.1 Review existing treatment measures. 1.2.2 Improve pollution prevention and treatment systems.	NRA, HA and LAs. HA, DoT, LAs and other road builders.	Development of best practice. Improved water quality.	Cost. Technical difficulty. Cost. Limitations of existing legislation. Limited short term impact.
1.3 Industrial Sites 1.3.1 Regular site visits and awareness campaigns. 1.3.2 Improve pollution prevention and treatment systems. 1.3.3 Direct all drainage to the foul sewer. 1.3.4 Better site selection.	NRA. NRA, LPAs, Site owners, Site occupiers. Site owners & STW. LPAs & Site owners.	Fewer pollution incidents and improved water quality. As above. As above. Reduced risk of serious pollution.	Manpower. Cost. Overload sewerage systems. Site availability.
1.4 Sewerage Systems 1.4.1 Improve system under AMP2. 1.4.2 Identify remaining problem sites. 1.4.3 Monitor surface water sewers for wrong connections and correct where found. 1.5 Oxygenate rivers after pollution.	STW . NRA . STW/NRA/ LAs . NRA .	Improved water quality. Improved knowledge. Reduced pollution. Reduced impact of pollution.	Expenditure limited. Future resources under AMP3. Manpower and cost. Scale and complexity of problem. Cost.

Your Views Count

QUESTIONNAIRE

THE AIMS OF THIS BOOKLET ARE:

- TO TELL YOU OUR VISION AND PROPOSALS FOR THE TAME CATCHMENT, AND
- TO ASK YOU TO TELL US YOUR VIEWS & COMMENTS.

This is your opportunity to tell us what you think. Please:

1. Answer the quick questions on the next three pages.
2. Write any extra comments on the back of this questionnaire.
3. Pull the questionnaire out of the booklet.
4. Send it to us in the FREEPOST envelope provided, even if you have not answered all the questions.

1. How did you first find out about this Catchment Management Plan?

- | | |
|--|-------------------------------------|
| <input type="radio"/> Letter from the NRA | <input type="radio"/> NRA's display |
| <input type="radio"/> NRA poster | <input type="radio"/> TV |
| <input type="radio"/> Radio | <input type="radio"/> Newspapers |
| <input type="radio"/> Other please specify | |

2. Where did you get this booklet ?

3. In which town or area do you live ?

4. Our vision for the catchment is of a diverse and sustainable water environment that is valued by local people (page4).

Do you agree with this ? Yes/No

If you disagree, please explain why.

5. Our key objectives for the catchment are shown on page 5.

They are to:

- Improve the river corridor for recreation and wildlife.
- Ensure the effective clean-up of contaminated land.
- Reduce the effects of pollution from urban run-off.
- Maintain and improve water quality, in rivers and canals.
- Protect and enhance existing nature conservation habitats.
- Seek to protect the environmental quality of canals.
- Review and upgrade flood defences, where necessary.
- Support increases in water based recreation where appropriate.
- Assess the effects of rising groundwater levels in Birmingham.
- Ensure that water resources are properly managed.

Please tick the three that you think are most important.

6. Are there other key objectives you would like to see included?

7. Are there any errors or omissions in this booklet? Yes / No

If yes, please give details

8. We have identified the issues on pages 14-32. Please circle the five issues that are the most important to you:

- 1 Urban run-off and the de-oxygenation of surface water.
- 2 The future operation of Lea Marston Purification Lakes.
- 3 The sustainability of the fish population in the River Tame.
- 4 River and canal lengths that fail their River Quality Objectives
- 5 River stretches that can be upgraded to protect water quality.
- 6 Investment by Severn Trent Water Ltd to improve water quality.
- 7 Poor water quality in canals.
- 8 Litter, unauthorised tipping and the aesthetic pollution of rivers and canals.
- 9 Contaminated run off from spoil heaps at abandoned coal mines.
- 10 The effect of contaminated land on water quality.
- 11 The impact of rising groundwater beneath Birmingham.
- 12 The over abstraction of groundwater from the Lichfield Aquifer.
- 13 Rising nitrate levels in groundwater.
- 14 The impact of canal restoration schemes
- 15 Review of flood defences on the River Tame in Birmingham & the Black Country.
- 16 Review of flood defence on the River Tame downstream of Water Orton.
- 17 The provision of a flood warning system for the West Midlands.
- 18 Flooding at Brookvale Road, Witton.
- 19 Lack of public access to rivers.
- 20 Development of river corridors in urban areas for wildlife and amenity.
- 21 Land use in the lower Tame Valley.
- 22 Provision of water based recreation sites.
- 23 The production of Water Level Management Plans for SSSIs.
- 24 The adverse effect of Alvecote Pools on downstream water quality.
- 25 Protection of the water environment in Sutton Park.
- 26 The future management of Park Hall Farm.
- 27 Control of invasive plants.
- 28 Weed growth in the River Anker.
- 29 The spread of zander.

9. Are there other issues you would like to see included in the action plan? Yes/ No. If yes, please give details.

Issue: 2 The future operation of Lea Marston Purification Lakes

The Lea Marston Purification Lakes are operated by the NRA. They improve water quality, and have allowed a viable fish population to establish downstream. Their operation has also led to improvements in the quality of the River Trent and contribute to the UK's commitment to reduce toxic metal inputs into the North Sea.

OPTIONS/ACTIONS	RESPONSIBILITY	BENEFITS	CONSTRAINTS
2.1 Continue a comprehensive review of current operations and practice.	NRA.	Identify potential improvements and cost savings.	-

Issue: 3 The sustainability of the fish population in the River Tame

The NRA has worked hard with other organisations to establish a healthy fish population in the River Tame. We have been successful below Lea Marston but recognise that the fish are at risk from pollution incidents, such as in July 1995.

OPTIONS/ACTIONS	RESPONSIBILITY	BENEFITS	CONSTRAINTS
3.1 Protect fish from storm flows upstream of Lea Marston by creating refuges for fish, both in the channel and off-line.	NRA Landowner.	Protect existing fish populations. Encourage plant and animal diversity.	Obstructions to river bank maintenance. Manpower and cost.
3.2 Re-stock following a pollution event.	NRA.	Rapid recovery.	Cost. Does not address the ongoing problem.

Issue: 4 River and canal lengths that fail their River Quality Objectives

The NRA has set River Quality Objectives (RQOs) for all rivers and most canals. Some stretches of rivers and canals do not meet their long term RQOs.

OPTIONS/ACTIONS	RESPONSIBILITY	BENEFITS	CONSTRAINTS
4.1 Highlight river stretches that could be improved under AMP3.	NRA.	Maximises benefit to the water environment from investment.	Amount of money available. Competing problems elsewhere.
4.2 Investigate further those stretches that fail their RQOs where the cause is unknown.	NRA (Lead), and STW.	Could lead to improvements under AMP 3 and beyond.	Cost.

Issue: 5 River stretches that can be upgraded to protect water quality

In a number of rivers the water quality exceeds the long term River Quality Objective (RQO). Where this is sustainable we propose to upgrade the long term RQO, to protect future water quality.

OPTIONS/ACTIONS	RESPONSIBILITY	BENEFITS	CONSTRAINTS
5.1 Upgrade the long term RQOs where possible.	NRA.	Building on past improvements. Creates new baseline in accordance with long term objectives.	-

Issue: 6 Investment by Severn Trent Water Ltd. to improve water quality

Severn Trent Water Ltd. (STW) are responsible for the sewerage system, and sewage treatment in the catchment. They have a programme of investment that is monitored by the Office of Water Services. This is the Asset Management Plan 2 (1995-2000) (AMP2). The NRA is working with them to ensure that the investment is directed to areas where it will best improve the water environment.

OPTIONS/ACTIONS	RESPONSIBILITY	BENEFITS	CONSTRAINTS
6.1 Agree details and monitor the implementation of schemes in AMP2 programme.	NRA and STW.	Improved water quality.	-
6.2 Assess water quality benefits of completed schemes.	NRA.	Measure achievement and identify future schemes for AMP3.	-

Issue: 7 Poor water quality in canals

Some canals, especially those of the Birmingham Canal Navigation, have poor water quality. The pollution mainly comes from the same sources as that in rivers, but because water in canals moves slowly there can be additional problems. Improvements in water quality and the promotion of public access encourage use of the canal network.

OPTIONS/ACTIONS	RESPONSIBILITY	BENEFITS	CONSTRAINTS
7.1 Further improve canal bed silts.	BW.	Improved water quality.	Cost.
7.2 Assess the impact of investment under AMP2.	NRA.	Identify sites for inclusion in AMP 3.	-
7.3 Further investigate canal lengths that fail their river quality objectives.	NRA.	Allows appropriate action to be taken.	Cost.
7.4 Develop appropriate treatment standards for CSO discharges to canals.	NRA, STW and BW.	Improved water quality.	-
7.5 Reconsider the use of River Ecosystem Classification for canals.	NRA, BW.	More appropriate standards.	-
7.6 Declassify the derelict Gower and Anson branch canals for formal water quality reporting.	NRA.	Reduced monitoring costs.	-

Issue: 8 Litter, unauthorised tipping & aesthetic pollution of rivers and canals

Many stretches of urban rivers and canals suffer from litter, unauthorised tipping and aesthetic pollution. As part of the NRA's General Quality Assessment (GQA) programme, we are testing a scheme which measures aesthetic pollution. Riparian (river bank) owners are generally responsible for removing litter although Local Authorities and the NRA have responsibilities in some circumstances.

OPTIONS/ACTIONS	RESPONSIBILITY	BENEFITS	CONSTRAINTS
8.1 Continue development of a pilot GQA aesthetics monitoring programme.	NRA.	Better measurement of the problem.	-
8.2 Implement aesthetics monitoring programme	NRA.	Better measurement of the problem.	Cost.
8.3 Promote initiatives, including: the removal of existing tipping and, sewage debris; better waste disposal facilities and public education.	NRA, LAs, BW STW, LEAs, and product manufacturers.	Less pollution.	Cost.

Issue: 9 Contaminated run-off from spoil heaps at abandoned coal mines

Metals being washed out from spoil heaps by rainwater are causing pollution problems at three former collieries: Birch Coppice, Baddersley Ensor and Pooley Hall.

OPTIONS/ACTIONS	RESPONSIBILITY	BENEFITS	CONSTRAINTS
9.1 Chemically treat contaminated water.	British Coal Property.	Improved water quality.	-
9.2 Restore and cap spoil-heaps.	British Coal Property.	Improved water quality and landscape.	Availability of capping material.
9.3 Re-profile and compact surface of spoilheaps.	British Coal Property.	Improved water quality.	May not resolve the problem.

Issue: 10 The effect of contaminated land on water quality

On some sites, such as old tips, industrial sites and mine workings, the land and groundwater are contaminated. Where possible the NRA aims to ensure that the polluter pays for the removal of the pollution. Many improvements have been achieved through redevelopment, however, some sites remain contaminated and are causing pollution of the water environment.

OPTIONS/ACTIONS	RESPONSIBILITY	BENEFITS	CONSTRAINTS
10.1 Clean-up Slacky Lane, Bentley Mill Lane, Villa Farm.	Land owners and LAs.	Reduced pollution of the water environment.	Cost. Legal constraints.

Issue: 11 The impact of rising groundwater beneath Birmingham

Groundwater beneath parts of Birmingham is rising back towards its former levels because of reduced abstraction by industry. In many areas this water is polluted or is becoming polluted as it rises through contaminated land. The NRA is responsible for monitoring the effects of this on the water environment.

OPTIONS/ACTIONS	RESPONSIBILITY	BENEFITS	CONSTRAINTS
11.1 Further investigate the potential impact of rising groundwater.	NRA.	Better understanding and use of resources.	-

Issue: 12 The over abstraction of groundwater from the Lichfield Aquifer

The Lichfield aquifer is used to supply the northern part of the catchment with drinking water. The rate of abstraction in some areas now exceeds the rate of recharge from rainfall. The level of water in the aquifer has fallen and this has led to some watercourses drying up in summer. South Staffordshire Water plc. (SSW) is working with the NRA to solve this problem by developing alternative supplies.

OPTIONS/ACTIONS	RESPONSIBILITY	BENEFITS	CONSTRAINTS
12.1 Implement the Memorandum of Understanding between SSW and NRA to reduce abstraction from parts of the Lichfield aquifer and develop alternative supplies.	SSW and NRA.	Reduction in the adverse effects on the water environment. Better public water supply.	Cost and timescale of development.

Issue: 13 Rising nitrate levels in groundwater

Nitrate levels in groundwater in the Lichfield aquifer are rising. At some boreholes South Staffordshire Water plc have installed treatment plants to keep the levels within European Standards. The increase is mainly due to changes in agricultural practice. The Lichfield aquifer has been designated as a Nitrate Vulnerable Zone (NVZ) and a programme of action will be required to reduce the amount of nitrates reaching groundwater.

OPTIONS/ACTIONS	RESPONSIBILITY	BENEFITS	CONSTRAINTS
13.1 Designate NVZs, consult on the restrictions to be imposed and review in 1997.	MAFF and NRA.	Reduced nitrates in the aquifer and surface water.	-
13.2 Continue to remove nitrates at water treatment works.	SSW.	Drinking water meets EC Directive standards.	Cost. Does not prevent further increases of nitrates in groundwater.

Issue: 14 The impact of canal restoration schemes on water resources and nature conservation

There are two canal restoration schemes being developed by local groups. They are at an early stage of development but their effects on water resources and nature conservation will need to be carefully assessed.

OPTIONS/ACTIONS	RESPONSIBILITY	BENEFITS	CONSTRAINTS
14.1 Assess the impact of the Ashby Canal extension and the Lichfield Canal on water resources and nature conservation.	Canal Trusts, EN and NRA.	Protects water resources and nature conservation.	-

Issue: 15 Review of flood defences on the River Tame in Birmingham and the Black Country

Residential and commercial land in the historic floodplain of the River Tame, is protected from flooding by a scheme begun in 1971. The NRA's current target standards of protection are higher than the standard set for the scheme.

OPTIONS/ACTIONS	RESPONSIBILITY	BENEFITS	CONSTRAINTS
15.1 Predict river flood flows and flood levels on the River Tame in the conurbation, of a 1:100 year flood event.	NRA.	Define the extent of flood risk.	Cost.
15.2 Check that defences are meeting acceptable standards & update them where necessary.	NRA.	Defences meet acceptable standards of flood risk.	Cost. Benefits must exceed costs. Environmental impact.
15.3 Review maintenance regime with regard to conservation opportunities.	NRA.	Improved habitat. Reduced cost.	Need to maintain effective flood defence.

Issue: 16 Review of flood defences on the River Tame downstream from Water Orton

A recent mathematical model of the historic River Tame has revealed that some reaches may require flood defence works. Existing flood defences at Minworth, Water Orton, Whitacre Heath, Fazeley and Tamworth need to be checked in the light of these results and updated where appropriate.

OPTIONS/ACTIONS	RESPONSIBILITY	BENEFITS	CONSTRAINTS
16.1 Check that all areas are defended to an appropriate standard.	NRA.	Identify areas not appropriately defended.	Cost.
16.2 Develop flood defence works for inclusion in capital programme as required.	NRA.	Protection of life and property to agreed standards.	Costs. Benefits must exceed costs. Environmental impact.

Issue: 17 The provision of a flood warning system for the West Midlands

The NRA predicts flooding and from the 1st of September 1996 the Environment Agency (our successors) will take over from the police and local authorities in issuing flood warnings to people in properties at risk. On certain reaches, it may be necessary to set up a flood warden system or other arrangements in compliance with national policy.

OPTIONS/ACTIONS	RESPONSIBILITY	BENEFITS	CONSTRAINTS
17.1 Investigate the feasibility of setting up flood warden systems on parts of the River Tame in the West Midlands conurbation.	NRA & West Midlands Emergency Planning Officers.	Efficient dissemination of flood warnings.	Time to set up system. Sufficient volunteer wardens. Rapid rise of rivers, upstream of Bescot.

Issue: 18 Flooding problems at Brookvale Road, Witton

River flood defence works were completed in the late 1980s but serious surface water flooding has occurred behind the defences since then. This is caused by surface water sewers and highway drains backing up. In September 1994 flood water seriously affected commercial premises and led to the closure of the A4040.

OPTIONS/ACTIONS	RESPONSIBILITY	BENEFITS	CONSTRAINTS
18.1 Design and construct a surface water flood alleviation scheme.	Birmingham City Council, STW and NRA.	Protection of property and reduced traffic disruption.	Cost. Benefits must outweigh costs.

Issue: 19 Lack of public access rivers

Public access to rivers in urban areas is generally poor. River corridors offer an excellent opportunity to meet the ever growing demand for attractive, safe footpaths, bridleways and cyclepaths. The NRA supports the creation of such routes, particularly the River Tame Walkway.

OPTIONS/ACTIONS	RESPONSIBILITY	BENEFITS	CONSTRAINTS
19.1 Develop the Tame Walkway (where possible as a cycleway) along the whole of the River Tame.	NRA, LAs and Landowners.	Improved public access and awareness of the rivers, and pollution reporting. Reduced car/bike/ pedestrian conflict.	Obstructions. Narrow corridors. Complex land ownership. Need co-operation of landowners. Cost.
19.2 Develop footpaths, bridleways and cycleways adjacent to urban rivers.	NRA, LAs and Landowners.	As above.	As above.
19.3 Promote public access and schemes to upgrade canal corridors.	BW, LAs and civic and amenity groups.	As above.	As above.
19.4 Develop links between riverside paths and other public rights of way.	NRA and LAs.	As above.	As above.



River Rea near Cannon Hill Park

Issue: 20 Development of river corridors in urban areas for wildlife & amenity

Watercourses and their remaining floodplains often provide important open space in urban areas. However, the wildlife value of most of the urban rivers has been severely damaged by flood defence works, past pollution and urban development. As pollution has been reduced, wildlife has started to move back, but is limited by a hostile physical environment.

OPTIONS/ACTIONS	RESPONSIBILITY	BENEFITS	CONSTRAINTS
20.1 Seek to create a continuous river corridor by setting new development back from the river bank.	NRA, LPAs and Developers.	Improved habitat and access for the public, flood defence and pollution control.	Loss of developable land.
20.2 Seek to restore culverted (covered) watercourses to open channels and resist culverting.	NRA, LAs & Landowners.	As above.	Loss of developable land. Cost.
20.3 Undertake a detailed survey of the river corridor.	NRA.	Optimise use of resources.	Cost and manpower.
20.4 Improve river corridors; including the creation of channel features and tree and shrub planting.	NRA, LPAs & Developers.	Improved habitat and amenity	Cost. Need to ensure no increase in flood risk.
20.5 Create bankside reed areas and longer grass to protect water voles (a threatened species).	NRA & LAs.	Improved water vole habitat.	Need to ensure no increase in flood risk.

Issue: 21 Land use in the lower Tame valley

The Tame valley contains important sand and gravel deposits. Old flooded workings offer excellent opportunities for recreational facilities and wildlife habitats, and some have become nationally important. The NRA is part of a working group which aims to provide a long term strategy to direct future development; maximising the benefits for conservation and recreation, and avoiding conflict between competing uses.

OPTIONS/ACTIONS	RESPONSIBILITY	BENEFITS	CONSTRAINTS
21.1 Develop a management plan for the middle and lower reaches River Tame Valley.	LPAs, EN, SC, Landowners and Local groups.	Resolution of conflict. Better provision of recreation facilities and wildlife habitats.	Requires general agreement. Must of the accord with adopted structure and local plans.

Issue: 22 Provision of water based recreation sites

There is a large, unmet demand for water based recreation in the catchment and there is the potential for new water based recreation sites. Recreation should be developed at the most appropriate locations and avoid conflict with nature conservation and amenity.

OPTIONS/ACTIONS	RESPONSIBILITY	BENEFITS	CONSTRAINTS
22.1 Carry out survey to assess need for water based recreation.	NRA, LAs and SC.	Meet the demand more effectively.	Cost. Limitations of existing information.
22.2 Develop Strategic Recreational Plan.	NRA, LAs, SC & Landowners.	Resolution of conflict. Improved water based recreation.	Cost.

Issue: 23 The production of Water Level Management Plans for SSSIs

The NRA, and district councils are required to produce Water Level Management Plans for water dependent Sites of Special Scientific Interest (SSSIs). These plans take into account the aims of all interests, including flood defence, agriculture, and abstractors and seek to further the conservation of the sites. The NRA is responsible for three sites.

OPTIONS/ACTIONS	RESPONSIBILITY	BENEFITS	CONSTRAINTS
23.1 Prepare WLMPs for Alvecote Pools, Birches Barn Meadows and Whitacre Heath SSSIs.	NRA.	Conservation of the SSSIs.	Agreement with English Nature and landowners.
23.2 Help district councils with hydrological assessments for sites for which they are responsible.	NRA.	Conservation of the SSSIs.	Agreement with English Nature and landowners.

Issue: 24 The adverse effect of Alvecote Pools on downstream water quality

Alvecote Pools Site of Special Scientific Interest (SSSI) is a series of shallow pools and marsh land east of Tamworth. The pools are popular for angling. The River Anker flows through the pools and historically, deposited silt causing the bed of the pools to rise. Now the river is scouring the silt out of the pools and this is causing discolouration of the river as far downstream as Lady Bridge, Tamworth.

OPTIONS/ACTIONS	RESPONSIBILITY	BENEFITS	CONSTRAINTS
24.1 Allow natural succession to continue.	NRA.	No disturbance to SSSI.	Effects on water quality, fisheries and amenity.
24.2 De-sludge pools connected River Anker.	NRA.	Improvement in water quality.	Cost. Possible damage to the SSSI. Maintenance.
24.3 Divert River Anker around the pools.	NRA.	Improved water quality.	Possible damage to SSSI. Land acquisition necessary.
24.4 Plant reedbeds downstream of pools.	Landowners and NRA.	Improved water quality.	Possible damage to SSSI. Need to ensure no increase in flooding of adjoining land.

Issue: 25 Protection of the water environment in Sutton Park

Several species of plants sensitive to high nutrient levels have become extinct in the pools of Sutton Park Site of Special Scientific Interest. There have been nutrient inputs from sewer overflows and wrong connections. Recent improvements to the sewers have allowed two overflows to be closed and reduced pollution levels, but there is still the potential for nutrient input from these sources. In addition, fish stir up the silt releasing the existing nutrients back into the water.

OPTIONS/ACTIONS	RESPONSIBILITY	BENEFITS	CONSTRAINTS
25.1 Increase the capacity of the sewer network.	STW.	Reduced nutrient input.	Not required under the agreed AMP2 programme.
25.2 Redesign overflows to reduce discharges.	STW.	Reduced nutrient input.	Not required under AMP2.
25.3 Reduce nutrient levels by removing silt and vegetation annually.	Birmingham City Council.	Reduced nutrient levels.	Disturbance of habitat and vegetation mobilisation of nutrients. Cost.
25.4 Remove some or all fish from Longmore, Wyndley, and Powells Pool.	Birmingham City Council.	Reduced mobilisation of nutrients.	Public acceptability. Cost.

Issue: 26 The future management of Park Hall Farm

The NRA owns 200 hectares of land at Park Hall Farm between Castle Vale and Castle Bromwich, alongside the River Tame. It is mainly wet floodplain meadow with ponds and wetlands. It was bought for a flood defence scheme but is no longer required. Surveys have shown that the site is important for birds and invertebrates. It is also an important potential recreational resource.

OPTIONS/ACTIONS	RESPONSIBILITY	BENEFITS	CONSTRAINTS
26.1 Sell the land.	NRA.	No liabilities.	Ensure that NRA's conservation & recreation duties can be met.
26.2 Retain ownership.	NRA.	Existing conservation value maintained.	Does not further NRA operational objectives. Cost.
<ul style="list-style-type: none"> • Undertake detailed habitat and wildlife survey. • Produce draft management strategy. • After public consultation implement agreed management strategy. 	NRA.	Better understanding of the ecology and wildlife of the site.	-
	NRA, EN, LEAs and others.	Agreed priorities for the future.	Cost and manpower.
	NRA and other partners.	Improved habitats and amenity for local residents.	Cost. Access difficulties.

Issue: 27 Control of invasive plants in the catchment

Three very invasive weed species grow in the catchment; Giant Hogweed, Japanese Knotweed and Himalayan Balsam. All three species suppress native vegetation and can cause erosion. Giant Hogweed also causes intense skin rashes if touched.

OPTIONS/ACTIONS	RESPONSIBILITY	BENEFITS	CONSTRAINTS
27.1 Identify areas colonised by these plants near watercourses.	NRA.	Identify size of the problem.	Manpower resources.
27.2 Coordinate a programme of herbicide spraying of waterside areas of Japanese Knotweed and Giant Hogweed.	NRA, LAs and Landowners.	Reduced risk of erosion, flooding and public health threats. Improved wildlife and amenity.	Manpower and cost.
27.3 Coordinate a programme of cutting Himalayan Balsam.	NRA, LAs and Landowners.	Reduced erosion risk. Improved amenity.	Manpower resources.

Issue: 28 Weed growth in the River Anker

The River Anker is affected by weed growth during the summer. It covers the surface of the water, shuts out light and makes fishing extremely difficult. The excessive weed growth may be caused by the high nutrient input from Hartshill and Polesworth Sewage Treatment Plants, and the lack of tree cover allowing more sunlight to reach the surface of the river.

OPTIONS/ACTIONS	RESPONSIBILITY	BENEFITS	CONSTRAINTS
28.1 Review current weedcutting practice to increase efficiency and effectiveness.	NRA.	Increase in angling use of river.	Possible ecological impact.
28.2 Plant bankside trees to promote shading.	NRA and riparian owners.	Reduce weed growth.	Cost and maintenance.

Issue: 29 The spread of zander

Zander are large predatory fish introduced from Europe and are now present in the Coventry, Ashby and the Birmingham and Fazeley Canals, and have been reported in the River Anker. They can have adverse impact on native fish stocks. British Waterways are studying them to help design a control programme.

OPTIONS/ACTIONS	RESPONSIBILITY	BENEFITS	CONSTRAINTS
29.1 Evaluate findings of BW investigation and formulate policy on future control of zander population distribution.	NRA and BW.	Stabilization of prey population.	-



The River Tame at Chetwynd Bridge

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In April 1996 the NRA will merge with Her Majesty's Inspectorate of Pollution and the Waste Regulation Authorities to form the Environment Agency. This new body will be responsible for the environmental protection of water, air and waste and will continue to seek to prevent and control pollution.

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