

catchment management plan



IDLE & TORNE action plan October 1996



ENVIRONMENT
AGENCY

The Environment Agency's Vision for the Rivers Idle and Torne Catchment Management Plan

The catchment of the Rivers Idle and Torne covers an area of 1307 km² within north Nottinghamshire and south Humberside and has a resident population of about 625,000 people.

Man has impacted on the catchment since early times and the area has a rich industrial and archaeological heritage. The heavily urbanised and industrial headwaters contrast sharply with the very flat, open and rural lower reaches nearer to the confluences with the River Trent. Man's influence is also apparent here though where drains have been cut and rivers re-routed and straightened to produce highly productive agricultural areas.

The catchment is predominantly rural with the exception of the headwaters, as described above. The River Idle and its tributaries flow through the heavily industrialised towns of Mansfield and Worksop, then through the rolling forested areas of Sherwood Forest and the Dukeries. The River Torne rises on the edge of Doncaster and flows through the flat areas of low land, characterised by the Isle of Axholme, Thorne and Hatfield Moors.

The Agency's vision for this catchment is to achieve sustainable use of the water resources within the catchment area, particularly in the lower reaches where water level management is of prime importance.

The key objectives of the plan are therefore to:

- Establish a balance between the demands of irrigation and abstraction and the needs of the environment.
- Ensure that the quality of minewater discharged to the rivers is of a standard appropriate to the needs of downstream users.
- Initiate and promote proposals for the improvement of habitats for fisheries and conservation.
- Ensure that the standard of flood protection is appropriate to the needs of the adjacent land use, consistent with the vision.

The achievement of this vision is dependant on the committed and enthusiastic cooperation of others. Some objectives are common goals, while others may require a degree of compromise between differing demands on the resources of the catchment. To achieve a shared vision we need to work in partnership with local authorities and many other agencies, environmental groups, individuals and all those who have the interests of the catchment at heart.



ENVIRONMENT AGENCY

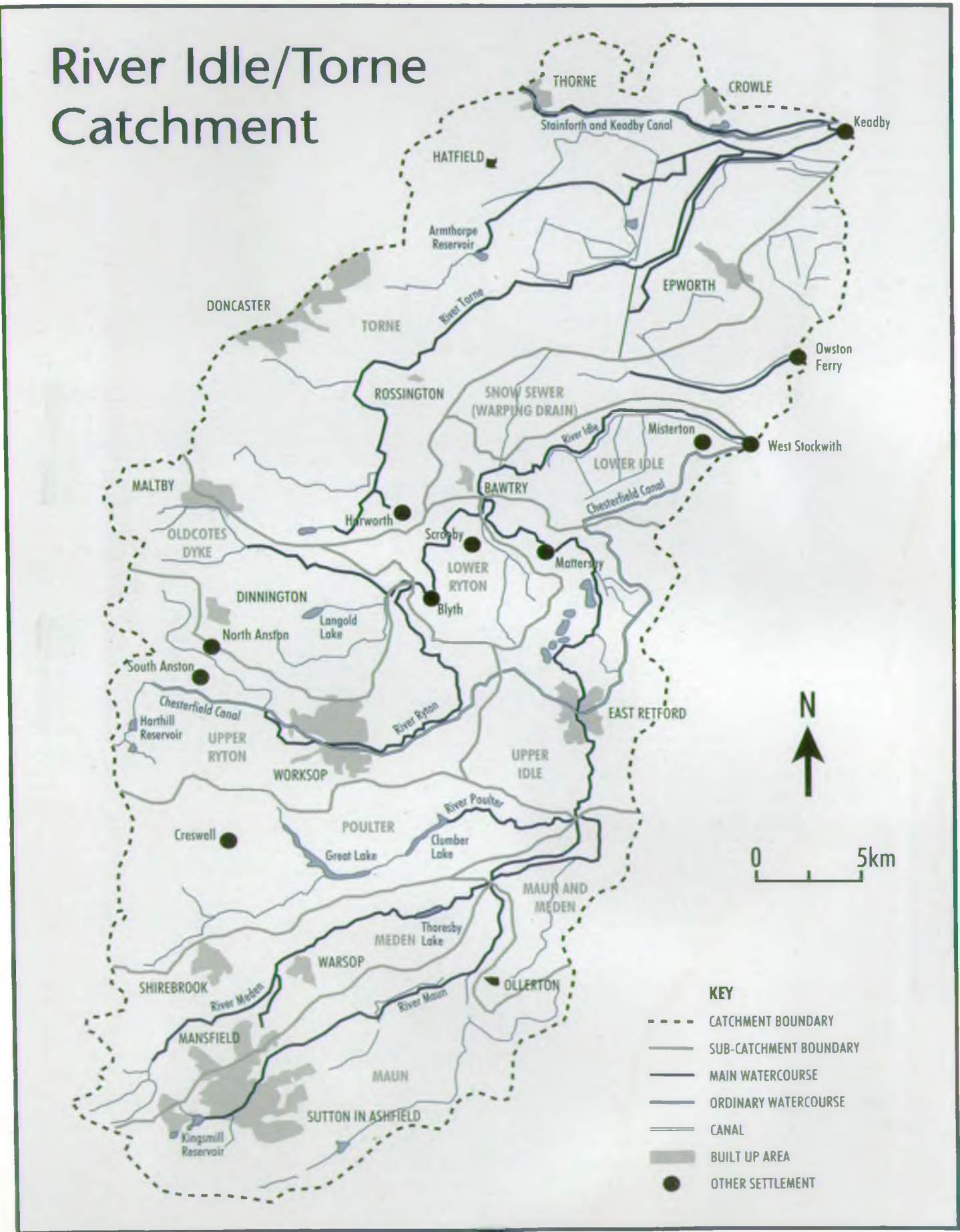
Information Services Unit

Please return or renew this item by the due date

Due Date

16-AUG-2006

Map of the Catchment



Key Details

General

Area	1307km ²
(Idle 842 km ² , Torne 378 km ² , Others 87 km ²)	
Population	625,000

Topography

Minimum level	0m AOD
Maximum level	204m AOD

Administrative Details

COUNTY COUNCILS:	Derbyshire
	Nottinghamshire
METROPOLITAN BOROUGH COUNCILS:	Doncaster
	Rotherham
UNITARY AUTHORITY:	North Lincolnshire DC
DISTRICT/BOROUGH COUNCILS:	Ashfield DC
	Bassetlaw DC
	Bolsover DC
	Gedling BC
	Mansfield DC
	Newark and Sherwood DC
ENVIRONMENT AGENCY:	Lower Trent Area
	Midlands Region
WATER COMPANIES:	Anglian Water Services
	Severn Trent Water Ltd
	Yorkshire Water Services
INTERNAL DRAINAGE BOARDS:	
	Althorpe; Armthorpe; Ashfield & Westmoor; Crowle;
	Everton; Finningley; Hatfield Chase; Idle & Rytton;
	Potteric Carr; South Axholme; Tickhill; Tween Bridge;
	West Axholme and Greenholme; West Butterwick
BRITISH WATERWAYS RESPONSIBILITIES:	
	Chesterfield Canal,
	Stainforth and Keadby Canal

OTHER NAVIGATIONS:

Main Towns and Populations

Bawtry	2,628	Mansfield	89,065
Crowle	3,699	Ollerton/Boughton	9,505
Dinnington	7,970	Rossington	12,472
Doncaster (part)	285,364	Shirebrook	9,220
East Retford	21,070	Sutton in Ashfield	40,455
Epworth	3,359	Tickhill	5,527
Hatfield	15,421	Thorne	6,855
Maltby	12,320	Warsop	13,035
		Worksop	39,120

Land Use

The main land uses in the catchment are arable (61%); woodland (12%); urban/industrialised (11%); grass (10%); fallow/bare (4.4%); peat bog (0.7%) and water (0.2%)

Water Quality

River and canal in each General Quality Assessment (GQA) Scheme class – 1994

GQA	CLASS	LENGTH (km)	%
Good	A	17.0	3.4
	B	62.4	12.4
Fair	C	180.2	35.8
	D	109.6	21.7
Poor	E	127.1	25.2
Bad	F	7.7	1.5
TOTAL		504.0	100.0

River/canal chemical sample monitoring pts	125
Consented discharges	341
Comprising:-	
Water Undertaker sewage/storm overflows	203
Private STP	45
Industrial	93

Water Resources

Average annual rainfall	638mm
Total licensed abstraction	671.7MI/d
Long term ave flow (R.Idle, Mattersey)	225MI/d
Long term ave flow (R.Torne,Auckley)	85MI/d
95 percentile exceedance flow (R.Idle,Mattersey)	78MI/d
95 percentile exceedance flow (R.Torne, Auckley)	30MI/d
Number of licensed abstractions	455
of which — surface water	285
groundwater	170

Flood Defence

Main river in Catchment	312.8 km
Floodbank maintained by Agency	119.4 km
Floodwalls	1.5 km
Major recent Flood Alleviation Schemes (main river)	3 (70km)
Agency pumping stations	17
Other pumping stations (pump direct to main river)	26

Fisheries

Length of watercourse designated under EC Directive for Freshwater Fisheries (78/659/EEC):	
Salmonid	0 km
Cyprinid	114 km

Conservation

Sites of Special Scientific Interest (SSSIs)	48
Sites of Importance for Nature Conservation(SINC)	409
National Nature Reserves	1
Local Nature Reserves	7
Important archeological sites in Humberhead Levels	6
Other archeological sites and finds in Humberhead Levels	580

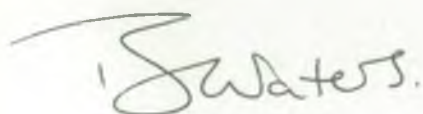
Foreword

The Environment Agency is one of the largest and most powerful environmental regulators in Europe, responsible for regulating waste disposal to land, industrial releases to air and safeguarding and improving the natural water environment. Our creation on 1 April 1996 was a positive step, merging the expertise of the National Rivers Authority (NRA), Her Majesty's Inspectorate of Pollution (HMIP), the Waste Regulation Authorities (WRAs) and several smaller units from the Department of the Environment. This merger results in a more comprehensive approach to the protection and management of the environment by combining many aspects of the regulation of land, air and water, as well as providing a single point of contact for our customers.

The process of Catchment Management Planning was used by the former NRA to manage the water environment in an integrated way. Catchment Management Plans identified the uses, pressures and problems within the area and sought to resolve any issues and conflicts. The objective being to balance the needs of all water users and to manage the area in an environmentally sustainable way. The Agency is committed to continuing integrated planning as a principal means of achieving the overall objective of sustainable development. Local Environment Agency Plans will be the mechanism by which this will be achieved and are considered further on Page 3.

The Action Plan for the Rivers Idle and Torne is the second stage in the catchment management process. The plan translates the issues and problems highlighted in the Consultation Report, into actions. These actions are timetabled and costed (where possible) and our aim is to deliver real improvements on the ground.

We welcome the good response received following the launch of the Consultation Report in November and the Forum held in August. The views and comments expressed have been carefully considered and incorporated where possible in the Action Plan. Two new issues have been added and several others have modified actions as a result of this consultation process.



Dr Brian Waters
Area Manager, Lower Trent Area

Contacting the Environment Agency

The Lower Trent Area Office is located at:

Trentside Offices
Scarrington Road
West Bridgford
Nottingham NG2 5FA

Tel: (0115) 945 5722
Fax: (0115) 981 7743

Enquiries about the Rivers Idle and Torne
Catchment Management Plan should be
directed to:-

Alison Fisher
Environment Planner
Ext 3620 at the Trentside offices.



A typical catchment view

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Introduction

1.1 The Environment Agency

The NRA was created in 1989 as an independent environmental agency, whose prime purpose was to protect and improve the water environment in England and Wales and to regulate the use of water by industry, agriculture, and the private water and sewerage companies.

In April 1996, the NRA merged with HMIP and the WRAs to form the Environment Agency. This new body is responsible for the regulation of water, air and waste and will continue to seek to control and prevent pollution.

One of our principal aims is to contribute towards attaining the government objective of achieving sustainable development by protecting and enhancing the whole environment. We anticipate that CMPs will continue as the focus for river basin management in the Agency.

1.2 Integrated Planning

Demands on the rivers, lakes, estuaries and coastal waters of England and Wales are large and increasing. Many different uses interact or compete for water and will inevitably come into conflict with one another.

Catchment Management Planning (CMP) was the means by which the former NRA undertook integrated planning for the water environment. The plans set out our vision for the future of specific river catchments and sought to create a partnership between public, private and voluntary sectors to achieve a shared objective. It was intended that CMPs (which are themselves non-statutory) would make a positive input to Local Authority Development Plans by emphasising the interaction between land use planning and the water environment. Section 4 outlines how the concerns of the water environment should influence the location and nature of land use change within the catchment.

The CMP process comprises three main stages, each supported by documents as follows:

- The Consultation Report: containing an analysis of the issues affecting each catchment, suggesting options for their solution, an assessment of catchment uses and resources, and information on targets for the water environment. It forms the basis for public consultation and discussion.

- The Action Plan: detailing areas of work and investment proposed by the Agency and others, formulated as a result of the consultation process. Timescale, targets and estimated costs are added at this stage.
- Implementation of the Action Plan: Progress to be monitored and an Annual Review produced, reporting on progress.

Our overall aim of protecting and enhancing the whole environment contributes to the world wide environmental goal of sustainable development. Holistic planning will be a principal tool in delivering this objective. Forward planning in the Agency will be undertaken for the full spectrum of our responsibilities and it will build on the CMP process. The plans will be known as Local Environment Agency Plans (LEAPs) and will include the new functions of Integrated Pollution Control (IPC) and Waste Regulation.

The schedule for achieving LEAP coverage for all the catchments in England and Wales is currently being decided. In the interim, we are committed to preparing Action Plans and Annual Reviews for CMP Consultation Reports that were launched before 1 April 1996.

Monitoring the implementation of identified actions is an important part of the process and this is achieved by Annual Reviews. In the CMP process four annual reviews were normally undertaken prior to producing a further Consultation Report. Due to the requirement to produce a LEAP to plan for all the Agency's responsibilities, this process is likely to be brought forward for the Rivers Idle and Torne.

1.3 Routine Work of the Agency

The Midlands Region is divided into four Areas, each headed by a locally based Area Manager. Most of the functions of the Agency operate at an area level and this allows an integrated approach to management which gives a responsive service to customers.

The strategic nature of the CMP/LEAP as a long term planning tool, directing manpower and financial resources to resolving environmental problems, means that the plan is not designed to reflect fully on routine activity within the catchment. Our everyday work, outlined below, commits substantial resources to managing the environment.

Integrated Pollution Control (IPC) was introduced by the Environmental Protection Act 1990 and is a method by which complex industrial processes having the greatest potential for causing pollution are regulated. This includes the regulation of sites which use, store or dispose of radioactive material. A main feature of IPC is that it takes account of all releases to air, water and land, in order to achieve the best overall environmental outcome.

The function of Waste Regulation includes the setting of consistent standards for waste management practice to regulate the treatment, storage, movement and disposal of controlled waste.

For pollution control, an important task is to monitor the aquatic environment and any discharges made to it, in order to assess compliance with National and European legislation and Consents to Discharge. The pollution of water is a criminal offence and we will prosecute when necessary. Pollution prevention work is extremely important and regular inspections are carried out at numerous sites.

Our responsibilities for water resources include licence determination, charging, source operation, policing and enforcement. Through these responsibilities, an integrated approach is taken to strike a balance between the needs of abstractors and the environment. Abstracting or impounding water without a licence can lead to prosecution of offenders by the Agency.



River Torne at Hirst Priory

Flood defence activities cover regulation and enforcement, maintenance and emergency response. Regulatory activities include issuing land drainage consents. Routine maintenance includes the clearance of debris from watercourses and the maintenance of channels and flood defence. Emergency response includes the continuous monitoring of weather and river levels to forecast where and when flooding is likely to occur and the issuing of appropriate warnings. During flood events, defences are monitored and operated.

We are responsible for maintaining, developing and improving fisheries. These duties include enforcement of fisheries law, scientific monitoring of fish stocks, fish rearing and stocking, fish rescues and advice to the general public. Fishery bailiffs check licences and ensure that anglers and others abide by the relevant legislation.

To ensure conservation and recreation duties are fulfilled, staff collaborate with numerous external bodies. We also manage many conservation and recreation sites and keep detailed registers of these. Environmental Assessment procedures are followed to ensure high quality control over the Agency's construction work.

The Agency works closely with Local Planning Authorities (LPAs) through its planning liaison function, under which we acts as a statutory consultee. Planning applications are considered in relation to their impact on the environment and a response is made which reflects any concerns of the Agency. Local, Structure and Regional Plans are all carefully considered. The CMP/LEAP will form a focus for much of our future activity within the catchment, but some of our work will remain reactive as we respond to specific events such as floods and pollution incidents.

routine work

The Consultation Process

2.1 Method of Public Consultation

One of the objectives of Catchment Management Planning is to involve all interested parties in the planning for the future of river catchments. We are therefore committed to the concept of public consultation on all our Catchment Management Plans. Comments and suggestions are welcomed from everyone with an interest in the water environment, ranging from large public or private organisations to individual members of the public.

Production of the Rivers Idle and Torne CMP has involved a number of stages since work commenced on the Consultation Report early in 1995. Informal consultation took place early in the process, during May 1995 with key external groups. Local authorities, national organisations and other representative bodies were invited to comment on an issues document, which identified and discussed the issues affecting the water environment in the catchment. All comments from this initial consultation were considered and incorporated into the Consultation Report wherever possible.

The Rivers Idle and Torne Catchment Management Plan Consultation Report was launched on 22 November 1995 at the Old Bell at Barnby Moor, near Retford. The report concentrated on the issues in the catchment and the management options for their solution. Delegates at the launch represented a wide spectrum of interests from within the catchment, including national groups and organisations. The launch was attended by approximately 100 representatives who all received a copy of the report. Further copies of the report were distributed to those who could not attend the launch. In all, the report was distributed to industry, local authorities, environmental groups, sport and recreation groups and the public. The former NRA's Regional Advisory Committees were consulted on the report.

The consultation process aimed to obtain agreement on the catchment uses; consensus on the environmental objectives and standards required; and detailed comment on the issues and options/actions outlined in the document.

A three month consultation period followed, from 22 November 1995 to 16 February 1996. During this time, the Consultation Report was promoted by:

- Press releases and radio interviews.
- The distribution of a large number of reports and summary booklets directly to key groups and individuals.
- A display about the catchment management plan was exhibited in the main libraries in the area. Many reports and a large number of summary documents were sent out on request during this period.
- Copies of the report were placed on deposit at council offices throughout the catchment, along with copies of the summary report.

2.2 Results of Consultation and Further Action

A total of 79 written responses were received as detailed in Appendix 2. Each response was acknowledged at the end of the consultation period. These responses provided useful feedback and many supported the objectives in the report and the concept of catchment management in general. Several organisations indicated their strong support for the concept and our commitment to manage catchments in an integrated and sustainable way. Our vision for the catchment was shared or fully supported by a number of organisations.

All comments were considered, and, where appropriate, incorporated into the Action Plan. Consideration has also been given to recently published NRA and external documents.

We welcome the comments that have been received and several changes to the issues raised in the report have been made as a consequence. The general support shown for many of the objectives set out in the report, was appreciated.

More information on the type of comments received is detailed in Appendix 3, which lists the broad comment areas and types of remarks for each issue.

A further consultation forum was held on 21 August 1996. All persons and organisations who made a written response to the consultation document were invited. Prior to this forum, a draft of the Action Plan was circulated and comments invited at the forum.

25 organisations and individuals were represented at the forum. Of those who could not attend the forum, a further number of written responses with suggestions and/or changes were received. A number of changes were discussed and incorporated into this Action Plan.

As a result of the consultation process, a number of amendments have been made to the consultation report. These are detailed in Appendices 3 and 4.

2.3 The Way Forward

The Action Plan is a strategic policy framework for the management of the catchment. It includes an Activity Plan to achieve the vision for the Rivers Idle and Torne Catchment. The Activity Plan will form the basis for improvements to the water environment by outlining the areas for work and investment proposed by the Agency and others. The Action Plan primarily covers the five year period to the year 2001.

A number of actions will require feasibility studies and appraisal of options prior to work commencing. In some cases, depending on the outcome of these studies and investigations, further action may not be required. Any action identified will be subject to funding availability. A number of the projects may take longer than indicated, owing to funding availability and government policy (see Section 5).

We have considered the detailed responses made and have developed this Action Plan in a way that reflects a balance between the opinions expressed and the need to ensure a feasible and workable plan.

the way
forward

Overview of the Catchment

3.1 Brief Description of the Catchment

The area covered by the catchment plan varies from the flat land of the Isle of Axholme and Hatfield Chase in the north east, to the rolling, wooded Dukeries and heavily urbanised headwater areas around Mansfield and Doncaster.

The Rivers Idle and Torne rise between Nottingham and Doncaster and flow in a generally north – easterly direction to join the River Trent at large land drainage pumping stations at West Stockwith and Keadby respectively. Major tributaries of the Idle are the Rivers Ryton, Meden, Maun and Poulter. The catchment of the Snow Sewer, also known as the Warping Drain has also been included in this catchment plan and flows into the River Trent at Owston Ferry. Most of the land in the lower reaches of the catchment lies below the River Trent high tide level and is protected by an extensive system of floodbanks.

The history of fenland drainage within the Isle of Axholme is a reminder of man's struggle to produce food from land which, left to the forces of nature alone, would be submerged beneath an inland sea. From early times, drains have been dug to control flooding. Works in the 17th Century brought large scale land drainage improvements. These works have continued and the early gravity drainage has been replaced by a comprehensive system of pumped drainage, which supports high grade agricultural land within the catchment area.

Major settlements in the catchment include Sutton in Ashfield, Mansfield, Worksop, East Retford and a small portion of the suburbs of Doncaster and Rotherham. With the exception of Worksop and East Retford, all the major urban conurbations in the catchment are located on the headwaters of the catchment's rivers.

3.2 Summary of Catchment Resources, Uses and Activities

These are described in detail in the Consultation Report. The following provides a summary of key points:-

3.2.1 Development and infrastructure

Seven District/Borough Councils, including the new unitary authority of North Lincolnshire District Council have planning and administrative responsibilities in the catchment along with Nottinghamshire and Derbyshire County Councils and Doncaster and Rotherham Metropolitan Borough Councils.

In the Nottinghamshire, Doncaster and Rotherham parts of the catchment, a significant need has been identified for housing growth.

There are now only ten working collieries in the catchment. The closure of others has resulted in various initiatives for employment, such as the establishment of new enterprise zones and new industrial and business estates. Various long-standing manufacturing industries are concentrated in the main population centres of the catchment. Doncaster supports a rapidly expanding service sector with growth in office-based activities, warehousing and distribution. A number of large distribution centres are being created close to motorways.

All these proposals for development highlight a clear need for the provision of adequate drainage infrastructure for new and extended sites to enable development to continue and avoid any risk to the environment.

The area is well placed in relation to the national road network. Rail transport is served by the electrified east coast main railway line which runs through the catchment linking East Retford and Doncaster. Passenger services from Nottingham to Worksop via Mansfield are to be re-opened with the introduction of the Robin Hood Line, the service having already been re-established to Mansfield Woodhouse.

Recent growth in business and cargo use has taken place at Retford (Gamston) Airport and further development is possible, providing there are no significant detrimental effects on the environment.

3.2.2 Water resource abstraction

Due to the presence of the Sherwood Sandstones and, to a lesser extent, the Lower Magnesian Limestone aquifers, groundwater development has been extensive for public water supply, agricultural and industrial usage. Three public water supply companies, namely Yorkshire Water Services (YWS), Anglian Water Services (AWS) and Severn Trent Water Ltd (STW), have in total 31 sources drawing on the groundwater resources. All three water companies supply local communities within the catchment. The 11 YWS boreholes are situated to the south and east of Doncaster and straddle the boundary between the Agency's Midlands Region and North East Region. They yield an average of 78 Ml/d, supplying to the town itself as well as the old mining villages outside the town. The five AWS sources yield an average of 44 Ml/d, most of which supplies the City of Lincoln, which is outside the catchment and is within the Anglian Region of the Agency, as well as towns such as Gainsborough and Retford. STW abstract from 15 sources at an average rate of 99 Ml/d. Some of this water supplies the City of Nottingham as well as centres of population within the Idle Catchment such as Mansfield. At two of the 15 sites, STW abstracts water from the underlying confined Lower Magnesian Limestone, as well as the overlying Sherwood Sandstones. Much of the groundwater is therefore pumped out of the catchment and represents a net loss.

There are no surface water public water supply abstractions from either rivers or reservoirs. The relatively flat nature of the catchment, combined with the presence of underlying permeable strata have precluded the construction of water supply reservoirs.

Industrial usage accounts for 13% of licensed groundwater abstraction with most of the licences being retained by aggregate quarrying companies, chiefly for sand, gravel and limestone washing operations. Except for some evaporative loss most of the pumped water is returned to the aquifer via lagoons and therefore does not represent a significant drain on resources. Other industrial usage of groundwater includes major food processing, especially in the Worksop area, textile and brewing in the Mansfield area and at some of the few remaining coal mines in the area.

Use of groundwater for agriculture, and dominantly for spray irrigation, is widespread throughout the catchment. Development of

surface water resources has been dominated by spray irrigation requirements. The abstractions are spread throughout the catchment. Many of the more recent licences have clauses which restrict abstraction when the river concerned falls below a certain flow, to protect river quality and fisheries.

Non spray irrigation licences are variable in their usage and include abstraction from the Torne for use at Auckley Quarry; a commercial fishery using Idle water; direct usage of Maun water for corn grinding at Ollerton Mill; the Agency licence transferring water from the Idle to the Carr Dyke at Retford and the British Waterways abstraction from the Stainforth and Keadby Canal for Keadby Power Station. Except for hydropower at Ollerton Mill there is no other current hydropower generation in either catchment and the Agency has received no enquiries about the use of hydropower. There are no sites listed in the Energy Technology Support Unit (ETSU) of the Department of Trade and Industry (DTI) survey of possible small scale hydropower sites within this catchment.

3.2.3 Water quality, sewage and industrial effluent disposal

The water quality of the catchment is dominated by the impact of sewage effluent (see Issues 12 and 13).

Most of the tributaries feeding the Rivers Idle and Torne rise on limestone, sandstone or coal measures strata to the west of the catchment. The headwaters are of good quality but all of the tributaries receive significant discharges of treated sewage effluent close to source.



Spray irrigation

For example, in the River Maun, under dry weather conditions approximately 75% of the derived flow consists of treated sewage effluent. A similar figure applies to the River Ryton below Worksop. It is worth noting that as a consequence of urban growth with historical industrial development, associated particularly with the Nottinghamshire/South Yorkshire coalfield, local water resources have been abstracted for domestic and industrial use, normally with subsequent discharge to a river. The natural high quality base flows may therefore have reduced, being returned to the rivers as treated effluent. In some cases the situation has been exacerbated by over abstraction, particularly of sandstone groundwater and net transfer of water out of the catchment.

Although in terms of the control of the conventional parameters Biochemical Oxygen Demand (BOD) and Ammoniacal Nitrogen the principal Sewage Treatment Plants (STPs) discharging to the catchment generally perform quite well, the high proportion of treated sewage effluent has given rise to elevated nutrient levels. These are being monitored carefully and the need for more extensive treatment will have to be examined in the future (see Issue 15).

There are many small private STPs discharging either to soakaway or to river in unsewered areas. The small scale normally precludes significant

impact on quality provided that the plants are effectively maintained. The systems are inspected and sampled from time to time by the Agency and sometimes give cause for concern and possible legal action. At Markham Moor near Retford a proliferation of small plants in an area unsuitable for effluent soakaway and lacking in adequate watercourse dilution has caused problems.

The discharge of sewage effluent to underground strata, other than single septic tank volumes, is considered with care. The NRA Groundwater Protection Policy is implemented with particular reference to groundwater protection zones around potable supply boreholes on the sandstone. The discharge of Ranby STP effluent to ground has recently been replaced by the pumped transfer of sewage to Retford STP as a groundwater protection measure.

Many of the urban areas referred to above are served by combined sewerage systems which can exhibit intermittent discharges from sewer overflows. These may have significant quality and aesthetic effects on rivers. A notable example is the River Maun in Mansfield and Sutton in Ashfield where extensive sewerage improvement work has been negotiated as part of the AMP2 agreement (see Issue 13).



Kingsmill Reservoir



Sand & gravel extraction

The principal industrial or trade effluent discharges to rivers in the catchment arise from coal mining operations. Although the number of operating collieries has reduced following the Colliery Closure Programme, 10 operating collieries remain in the catchment. Two other disused collieries continue to discharge minewater under consent. Rainfall generated runoff from these and from former colliery spoil tips is discharged to all of the main tributaries. The main river impact of coal mining arises from the discharge of minewater effluent. The quality of minewater varies from colliery to colliery and from seam to seam. It is however normally saline, contains ammoniacal nitrogen and can be ferruginous (containing iron). Apart from the latter which can be treated by oxidation, the chloride and ammoniacal nitrogen content are not easily treated. In some circumstances the discharge of minewater can be advantageous, such as providing additional dilution for other effluent; in other cases very high chloride or ammoniacal nitrogen contents may threaten quality or other river uses (see Issues 16 and 17).

The Agency recognises the difficulty in treating some effluent to remove salinity but where practicable it has taken the pragmatic approach of permitting controlled discharge under appropriate river conditions. In the case of Welbeck Colliery for example a consent has recently been issued, to be reviewed after one year, which permits discharge when adequate natural dilution is afforded to protect fisheries. Discharge has been prohibited when other uses such as abstraction of river water for crop irrigation would have been compromised by increased salinity.

In another case the Agency has opposed the discharge of additional minewater from the non operational Creswell Colliery (pumping is continued to protect other working collieries) into the River Poulter because of river use constraints. An overland pipeline is being constructed to direct effluent out of the catchment.

The Agency has regular discussions with the Coal Authority at both National and local levels and has agreed a Memorandum of Understanding (MoU) with the Authority on environmental aspects of new closures. A MoU has also been agreed between the Agency and the Coal Operators over the need to give warning of mine abandonment and cessation of pumping.

With the demise of the coalfield there has been an increase in industrial estates in many urban areas across the catchment. These estates will often cater for a wide range of industries frequently with many different parent companies. Pollution problems have arisen through poor operational practice, spillage and wrong connection which can be difficult to trace positively. The problems can be exacerbated where the drainage infrastructure has not been adopted by the sewerage undertaker or the Local Authority. Examples of industrial estates where problems have been experienced include Dinnington, West Carr, Retford, Hellaby and Warmsworth Holt (see Issue 18).

There are significant effluent discharges from iron and steel wire works in the Ryton and Torne catchments. The prevalence of quarrying for limestone, sandstone, sand and gravel has also led to discharge of settled rainfall generated effluent to many of the rivers in the catchment. The disposal of Pulverised Fuel Ash (PFA) from a coal fire power station into former sand and gravel quarries has led to consented discharges into the River Idle below Retford.

3.2.4 Mineral extraction

The mineral resources, which include hydrocarbons, are extensive. They have been and continue to be heavily exploited, with the area being a major exporter of such resources to neighbouring large centres of population.

Peat, oil, gas and coal are all forms of hydrocarbon. Peat is extensively extracted from Hatfield and Thorne Moors, while small amounts of oil and gas are found and exploited in the Bothamsall and Hatfield areas. The large coal reserves have been mined for over 150 years at a very high rate of extraction. A major contraction in the industry over the last five years has, however, resulted in only 10 operating collieries remaining. There are no operational opencast coal sites in the area.

Sand and gravel deposits occur extensively in the low lying areas of the catchment and extraction is on a large scale. A number of new developments are proposed, which, if given planning permission, will ensure extraction continuing for at least the next 20 years. In the western part of the catchment, limestone (Lower Magnesian Limestone) is quarried, especially in the Mansfield, Shireoaks and Maltby areas. Clay for the production of bricks is extracted from the Maltby area.

Some problems of adverse effects on the water environment can result from the extraction of minerals. These include river subsidence arising from coal mining and loss of groundwater resources due to dewatering activities at sand and gravel quarries. In many cases, once the mineral has been quarried, large voids exist due to a lack of suitable inert infill. The Agency therefore aims to reduce the negative impacts on the water environment of mineral workings and their after use and to maximise the environmental benefit associated with site restoration. The continued

close co-operation between the Mineral Planning Authorities and the Agency is essential to achieve this aim.

Since the formation of the NRA in 1989, and its successor, the Environment Agency, several schemes for remedial works as a result of mining subsidence have been carried out principally on the Rivers Maun and Meden. At Gleadthorpe on the Meden, conservation enhancements, including a wildlife pond and improved landscaping, have been provided. A similar large scale project has recently been completed, upstream of the confluence of the Rivers Maun and Meden, at Whitewater.

3.2.5 Solid waste disposal and contaminated land

There are 279 waste disposal facilities in the area. These include landfills, waste transfer stations, waste treatment sites and scrapyards. There are few major landfills accepting household/commercial or industrial wastes within the catchment. Generally, all waste disposal facilities are operated satisfactorily. There are, at the time of production of this plan, a number of new proposals for major landfills within the catchment. Much of the area lies on a major aquifer of high vulnerability and is not ideally suited for landfill. Often the minor aquifers, although theoretically less vulnerable to groundwater pollution, may be undermined, with associated fracturing above the workings. They also have surface water constraints on development for landfill or have groundwater discharging direct to a watercourse.

Contaminated land is not a widespread problem in this catchment, but there are several sites of concern. The cessation of industries and dereliction of the associated land has resulted in several locations where water resources are at risk or are already polluted. Examples of such a former industry are the coal carbonization plants that existed on some colliery sites, such as at Thoresby, Harworth, Mansfield and Thurgroft. The Mansfield site and its associated groundwater pollution are currently being investigated using European funding.

Because of the high vulnerability of the groundwater across much of the catchment, it is essential that any problem sites are investigated and remediated to the highest standard, with close association at every stage with the Agency.

3.2.6 Agriculture

Around 76% of the land within the catchment is in agricultural use, 12% is under woodland, mainly the remaining area of Sherwood Forest. Of the area being farmed, 85% is under arable cropping and 15% down to grass. The area includes just under 1000 agricultural holdings, of which about 70% are under 100 hectares.

The two main soil types in the catchment determine the kind of arable cropping. On the light sandy soils of the Sherwood Sandstone area, the major crops are potatoes, sugar beet, carrots, cereals, peas and linseed. The root crops in particular, are intensively irrigated most summers, either from boreholes, or by direct abstraction from the Rivers Idle and Torne and their tributaries. In the Isle of Axholme, beetroot is grown in preference to sugar beet on many farms.

The soils on the western and eastern boundaries of the catchment are heavier. The predominant crops are cereals, oilseed rape and field beans, although potatoes and sugar beet are also grown but on a lesser scale than in the area of lighter sandy soils. Dairy farming is limited to a small number of isolated large herds over most of the area, with smaller herds on the western boundary in northeast Derbyshire and south Yorkshire.

Several very large intensive poultry units and also a number of outdoor pig units are located on farms, mainly on the lighter sandy soils. Intensive pig units, with little land for manure disposal, are found throughout the area. On the majority of livestock units, manure, slurry and liquid effluent disposal takes place onto agricultural land. Elevated levels of nitrate are found in public water supplies in this area. The catchment has five Nitrate Sensitive Areas (NSAs) within its boundary. In addition, the whole of the Sherwood Sandstone area from the southern boundary of the catchment to just north of Bawtry is a designated Nitrate Vulnerable Zone (NVZ) under EC Nitrate Directive 91/676.

Both deep coal and opencast mining have had significant impact on the farming of the western and southern boundaries of the catchment. Most of the restored sites are down to grass, but some well established ones are now under arable cropping.

Farming has declined over the last 15 years in south Yorkshire, mainly west of the M18 motorway. Further housing development is likely to take place in this area and also on the Mansfield/Kirkby in Ashfield axis in the south of the catchment.

3.2.7 Forestry

Existing woodland cover is mainly concentrated in the southern half of the catchment, mainly in an area known locally as the Dukeries. As the name suggests, these were and are privately owned farm estates where the woodland follows a traditional pattern of landscape enhancement, sporting, and productive woodland, mainly concentrated around the main house and associated parkland. A large proportion is still in private hands and still managed on traditional estate lines. The remaining areas are either owned or leased by the Forestry Commission, which currently manages these commercial woodlands, following current thinking on multi functional bio-diverse woodlands. The large monoculture even-aged conifer blocks are currently being restructured and opportunities are taken to extend the broad leaved content of these woodlands.

Woodland throughout the remaining areas of the catchment are owned and managed by small family estates, farmers and individual landowners. Remnant ancient woodland sites have been acquired by the Nottinghamshire Wildlife Trust and are managed for pure conservation aims, with very little commercial exploitation. There has been very little extension to woodland cover in recent times within the catchment.



The Major Oak, Sherwood Forest

Where it has occurred, it has been on a small scale, usually less than one hectare and mainly intended as shooting cover or recreational woodland. There are, however, two local initiatives within the catchment to encourage the planting of new woodlands. These are the Greenwood Community Forest and the Sherwood Initiative.

Only a small portion of the Greenwood Community Forest falls within the catchment, in an area south of Mansfield. The Sherwood Initiative has no fixed boundaries and covers an area north of Mansfield, encompassing Worksop, Bawtry and Retford. In recognition of the importance of extending woodland cover in these initiative areas, the Government has recently announced additional financial incentives, aimed at encouraging farmers to release more land from intensive production.

The only other areas likely to become available for woodland planting are redundant coal industry sites, old sand and gravel workings and completed landfill areas.

The existing large woodland blocks currently managed by the Forestry Commission provide not only good commercial timber, but also large areas to accommodate a range of recreational activities.

3.2.8 Surface water drainage and flood defence

The Rivers Torne and Idle outfall to the River Trent at large land drainage pumping stations at Keadby and West Stockwith respectively. The majority of the land in the lower reaches of the catchment lie below the Trent high tide level. Since the 1600s, when the Dutchman Cornelius Vermuyden was engaged by King Charles I, land drainage improvements have been a continuous process. The early gravity drainage has now been replaced by a comprehensive system of pumped drainage which supports high grade agricultural land, by discharging low level water into the embanked high level carriers. The importance of drainage within the area has led to the creation of 14 Internal Drainage Boards (IDBs). These IDBs have similar powers to the Agency within their districts, including power to levy drainage rates to fund improvement schemes and permissive powers to carry out drainage works on their awarded drains.



West Stockwith Floodgate

River Torne

The total catchment area of the Torne system to Keadby pumping station is 378 km² (146 square miles), with a series of pumping stations (17 Agency and 26 others) lifting water from the surrounding land or boosting water online to discharge across almost level land. The comprehensive pumped system, collecting water from the very fertile agricultural land of the Isle of Axholme on its way to the River Trent, was first constructed in the 1940s. It has been subsequently modified and improved to form an efficient drainage system in winter and allow for controlled irrigation in the summer. The River Torne is the only natural watercourse in this system collecting water from the expanding urban area on the western edge of the catchment and discharging by gravity to Keadby pumping station. The river was improved in the late 1980s and early 1990s, but even in its improved condition can only discharge a 1 in 10 year return period flow (with a minimum of 300mm freeboard). Further raising of the level of defence is not practical or cost effective, since the riverbanks are built on peat and subject to settlement. The increasing runoff from the development in the Doncaster area could put at risk the standards of flood defence if not properly managed.

A hydraulic model study of the river has been carried out for the Agency by consultants in order to define an optimum pumping regime for this important area of agricultural production and wildlife habitat.

River Idle

The Rivers Ryton, Maun, Meden and Poulter discharge urban runoff from Worksop, Mansfield and a small part of Rotherham, before combining to form the River Idle. This flows through a low lying fertile valley, before being pumped into the River Trent at West Stockwith. The total catchment area of the river and its tributaries upstream of its outfall is 842 km² (325 square miles). Following the construction of the West Stockwith pumping station in the early 1980s and the introduction of pumped drainage from the River Idle to the River Trent, a comprehensive improvement scheme has been carried out on the River Idle between its outfall with the River Trent and upstream of Retford. This protects over 300 properties to a 1 in 100 year standard and includes increased protection of over 1000 hectares of agricultural land and improvements to floodplain areas. The upper tributaries of the Idle and the Rivers Maun, Meden, Ryton and Poulter generally have reasonably wide floodplains with steep sided valleys. Periodic flooding of adjacent farmland has caused few problems here in the past. The only

works carried out on these watercourses has been to improve the discharge capacity through the urban areas of Mansfield and Worksop, and to make sure that remedial works have been completed following mining subsidence.

Other watercourses

Other minor watercourses within the catchment area pump water from IDB areas directly into the River Trent and these include the Snow Sewer (Warping Drain), which is a main river watercourse.

3.2.9 Fisheries

There are 114 km of river designated under the EC Fisheries Directive as cyprinid (coarse) fishery within the catchment. Fish populations are very much dependant on the quality and quantity of water present and the variety and quality of the habitat. The control of demand for water and the maintenance of water quality standards are therefore of paramount importance to fisheries. In essence fish can be considered as the 'customers' within the environmental market.



Angler on the River Torne

The quality of waters is assessed on their ability to support salmonid and cyprinid fish. Where designated, water quality should be maintained to comply with standards set in the EC Fisheries Directive. Fish populations will be monitored and managed where necessary to maintain the fishery potential.

Fishery habitat has been degraded in the past by works for flood alleviation purposes. Resident fish have in turn suffered with regards to suitable holding areas and spawning sites. Fisheries exploitation within the catchment area is largely due to rod and line fishing. Such activity on the rivers is variable in nature from organised angling clubs and matches, to the occasional angler.

Stillwater angling is an increasingly popular option for many anglers in the catchment, especially where river fishing is poor or inaccessible. Most forms of stillwater angling are available either on club only or day ticket waters.

The River Torne and the rivers in the catchment of the Idle are all designated coarse fisheries, the Idle and Torne being formally leased fisheries to several angling clubs.

3.2.10 Conservation, recreation and navigation

The catchment is rich in historical and archaeological finds dating from the palaeolithic period to post medieval. Of particular note are the Creswell Crags caves, and the peatland deposits in the Humberhead Levels. Investigations into the relocation of Creswell STP are being undertaken by Severn Trent Water Ltd. The drainage patterns of the Rivers Idle and Torne were substantially changed in the 1600s to drain the low lying land for agricultural gain, leaving the land fit for tillage. There are old pumping stations and syphons in this area which are listed structures.

The large country estates add to the historical aspects of the catchment and the ruins at Roche Abbey and Mattersey are impressive, both sitting in river valleys. The water pumping station at Boughton is a fine example of a Blackburn building.

The area of woodland covered by the once extensive Sherwood Forest is now much reduced in size. Parts of it are designated as a Site of Special Scientific Interest (SSSI) and listed to be considered as a Special Area for Conservation



Boughton pumping station

(SAC) under the Habitats Directive, together with Thorne, and parts of Crowle and Goole Moors. Thorne Moors, only partly in the catchment, and Hatfield Moors are raised mires, SSSIs and are both being worked for peat. The long term future of the sites has been assured by agreement between the peat company and English Nature, but there are concerns regarding the levels of the underlying groundwater and the ability to sustain water on the moors.

English Nature and the Countryside Commission are working on Joint Character Areas which combine Natural Areas and Landscape Character Areas. Within this plan, four joint character areas are involved: Humberhead Levels; Sherwood Forest; Trent Valley Levels and Southern Magnesian Limestone. Of particular note in the latter area are sites important for their calcareous flush communities. These sites, Ginney Springs and Whitwell Woods, are very dependant on high quality groundwater.

Sherwood Forest and the Dukeries estates offer extensive recreational facilities, the Robin Hood visitor centre and the Major Oak being very popular with foreign tourists. Greenwood Community Forest will enable more facilities to be provided for sport and recreation, whilst highlighting heritage aspects. There are many gravel pits in the Idle valley and these provide refuge for birds as well as excellent bird watching. Some are also used for sailing, jet skiing and power boating.

The Robin Hood Way is a recreational route running from Nottingham to Sherwood Forest, and it incorporates other routes reaching to Creswell. Other trails include the Meden and Maun Valley Trails. The Dukeries Bridle Route offers a 32 mile ride, and there are many cycle routes. Tourists are served with many caravan sites and the Sherwood Forest Holiday Village. Many colliery spoil tips and disused mineral railway lines are being reclaimed for recreation purposes.

Boaters use the Stainforth and Keadby Canal to navigate from the Tidal Trent to the River Ouse in Yorkshire, via the New Junction and Aire and Calder Navigation, which lie outside the plan area. The lower stretch of the River Idle is an ancient navigation. From the twelfth to eighteenth centuries, Bawtry was a well known river port. The Chesterfield Canal, part of which is designated as an SSSI, offers tranquil boating from West Stockwith to Worksop.

It is known that in the Idle and Torne floodplains there are Bronze Age, Iron Age and Roman finds and that to preserve these remains the floodplain should remain undisturbed and regularly wet. It is also known that peat preserves organic remains whilst it is wet, but that these remains are destroyed when the peat dries out. In this way many as yet undiscovered remains are lost. The Humberhead Levels has a great many known archaeological sites and these may be protected but the loss of unknown wet-preserved archaeological remains is immeasurable. It is important to preserve such remains in the floodplains of the Rivers Idle and Torne.

The Relationship between Land Use and the Water Environment

4.1 Land Use Planning and Catchment Management Planning

Land use has the single most important influence on the water environment. It follows therefore, that land use changes, whether from increased urbanisation and other pressures for development, tourism, changing agricultural practices or afforestation, have important implications for the water environment. The impact of land use changes may not always become apparent in the short term. A better understanding of the complex relationship between land use changes, the water environment and the time scales involved, is therefore essential if we are to succeed in the long term sustainable management of the catchment.

Agenda 21 emanated from the Rio Earth Summit as a method of progressing sustainable development from the community level up. It identifies the need for an integrated approach to the management of land and water resources. Government planning guidance (e.g. PPG12, PPG23, Circular 30/92) highlights the importance of communication between local planning authorities and the Agency and the relationship between land use and the environment. It is just as important that liaison takes place with other agencies whose policies and actions impinge on the environment.

The broad objective of catchment management planning is to conserve and enhance the total river environment through effective land and resource management. The Agency is well placed to influence some of the factors affecting the water environment, particularly within the river corridor. It has, however, very little control over the mechanisms which determine land use change on a catchment-wide basis. This is largely the responsibility of local planning authorities (LPAs) through implementation of the Town and Country Planning Acts. Government policies on agricultural subsidies also have an impact on land use, particularly in rural catchments.

The policies in statutory development plans are important in this regard in that they set out the framework for land use change, and provide the key reference for the determination of planning applications. The Agency encourages the

inclusion of policies which reflect its concerns and responsibilities for the water environment.

The former NRA produced a set of statements in its "Guidance Notes for Local Planning Authorities in the Methods of Protecting the Water Environment through Development Plans". These statements provide a guide to LPAs on policies that protect the environment. The document will be updated shortly by the Agency.

The current status of development plans within the Idle/Torne catchment is summarised in Appendix 5, which is an update of Table 1 of the Consultation Report. One plan has been adopted since the production of the Consultation Report – Ashfield Local Plan in December 1995. The East Midlands Regional Planning Guidance (RPG8) was published in March 1994 and that for Yorkshire and Humberside in March 1996 (RPG12). The Guidance requires LPAs to set out planning policies which take full account of land use effects on the water environment by effective integration with CMPs.

4.2 Land Use Statements for the Idle/Torne Catchment

The following land use statements give a catchment perspective to documents such as the Guidance Notes referred to above, and are intended to assist local authority planners and others to integrate water issues into their decisions and actions. They identify areas and potential uses of land which have particular implications for the water environment within the catchment.

For each statement, examples of Local Authority Development Plan policies are cited. This is not a comprehensive list of cross-referenced policies, but rather serves to illustrate the interface between the Agency and Local Authority planning activities.

LU1 The Agency will encourage all local authorities to adopt a precautionary approach to development which might affect the water environment in the catchment. The effects of development on the water environment should be considered so as to minimise its adverse impacts and maximise potential benefits.

In particular, we will work with developers and others to encourage inclusion of environmental enhancements, including integration of existing watercourses and wetland habitats, as part of development wherever appropriate.

e.g. Nottinghamshire Structure

Plan Review	Policy 3/1
Ashfield Local Plan (Adopted)	Policy P1
Derbyshire Structure Plan (Consultation Draft)	Policy SP1

- LU2** Full account needs to be taken of the availability and provision of surface water disposal and sewerage and sewage treatment facilities in considering the location, extent and timing of new developments.

Several developments in the catchment are served by inadequate foul and/or surface water drainage arrangements. In some cases the drainage systems have not been adopted by the water undertaker and this has led to difficulties in assigning responsibility for drainage. Pollution problems have arisen on industrial estates through poor operational practice, spillage and wrong connections, eg Hellaby, Warmsworth, North Anston and West Carr Industrial Estate at Retford. Inadequate drainage can render industrial estates unsuitable for certain types of development.

In other cases, such as the development of restaurants and hotels around the A1 Markham Moor roundabout, inadequate foul drainage has led to the proliferation of small Sewage Treatment Plants (STPs). The widely variable loads discharged to the private STPs here have exacerbated inconsistencies in treatment performance leading to intermittent public complaint and pollution.

e.g.

Regional Planning Guidance for the East Midlands (RPG8)	Para 13.4
Regional Planning Guidance for Yorks & Humbs (RPG12)	Para 13.6
Nottinghamshire Structure Plan Review	Policy 11/3
Mansfield District Local Plan (Deposit Draft)	Policy U3, U4

- LU3** Full account needs to be taken of the availability and provision of water supplies in considering the location and extent of significant new developments. The key issues are quantity, quality, location and source (including surface water or groundwater) of abstractions. The resources of many watercourses are now fully utilised and no further licences authorising direct abstraction are issued for the summer period. Abstraction from these watercourses is however permitted during the winter period with the water stored in reservoirs for use during the following irrigation period. Many of the groundwater areas are also fully committed. Restrictions on new licences are needed to protect the broad water based environment including fauna and flora, existing licence holders and water quality. The Agency supports measures that minimise waste through leakage control and demand management and looks to the Water Supply Companies to meet current and increased demands in an environmentally sustainable manner. There is a strong persistent demand for additional resources, both surface and groundwater, to be made available for agricultural and horticulture usage in most of the catchment. Industrial demand tends to be variable but is strong in the Mansfield area due to a need to encourage more industry to move in following colliery closures. There is also a demand by the Water Supply Companies especially to have the capability of meeting peak supply demands with confidence.

e.g. Regional Planning

**Guidance 8
Paras 13.1-13.3.**

Nottinghamshire Structure Plan Review	Policies 11/2, 11/3
Ashfield Local Plan (Adopted)	Policy P21
Derbyshire Structure Plan (Consultation Draft)	Policy EP5

- LU4** The conservation, fisheries, landscape, heritage/archaeological and recreational value of local river corridors needs to be protected and enhanced. This includes protection under conservation legislation such as designation of AONBs, ESAs, SSSIs, SAMs etc, and guidelines such as those produced by the Forestry Authority. It also involves prevention of soil erosion by inappropriate riverside land use and the consideration of increased flood risk. The value of buffer zones and sensitive riparian management is recognised. Stretches of

river where there are problems of an integrated nature should be targeted and a strategy for the river corridor agreed.

- e.g. **Regional Planning Guidance 8** **Para 13.6**
Regional Planning Guidance 12 **Para 13.7**
Nottinghamshire Structure Plan Review **Policy 3/18**
Newark & Sherwood Local Plan (Deposit Draft) **Policies R9-R11**
Bolsover Local Plan (Consultation Draft) **Policy ENV4**

LU5 The floodplains of rivers and watercourses in the catchment need safeguarding from encroachment by development. The Rivers Idle and Torne and their tributaries are naturally prone to regular flooding although there are few places where the floodplain width exceeds a kilometre. The relative scarcity of high altitude fully protected land suitable for development means that there is pressure for development in floodplains. All major areas at risk from flooding have been protected, but isolated properties may be at risk at the edge of the floodplain or from overtopping or breaching of flood defence. A development in the floodplain of the Idle valley which received planning permission against advice is currently the subject of a review by the Planning Authority. Flooding problems caused by surface water run-off are restraining development in some minor tributary valleys.

- e.g. **Regional Planning Guidance 8** **Para 14.7**
Regional Planning Guidance 12 **Para 14.5**
Nottinghamshire Structure Plan Review **Policy 11/1**
Ashfield Local Plan (Adopted) **Policy P21**
Bassetlaw Local Plan (Deposit Draft) **Policy 6/25**

LU6 The management of contaminated land sites is raised as an issue in the CMP. Industrial dereliction and waste disposal in the catchment has resulted in contamination of land in several locations with waste containing substances which are potentially hazardous to the water environment. Advice will be given pertaining to the full spectrum of the Agency's responsibilities. There are sites where former activities have left residual contamination and where disturbance or redevelopment might lead to a serious risk of deterioration in water quality. The Agency will seek to use redevelopment opportunities to agree remediation measures to eliminate the risk of pollution. Where appropriate, it may be necessary to instigate remedial works on operational land.

- e.g. **Nottinghamshire Structure Plan Review** **Policy 12/1**
Bassetlaw Local Plan (Deposit Draft) **Policy 6/27**
Mansfield District Local Plan (Deposit Draft) **Policy U2**
Rotherham UDP Written Statement **Policy WD1**

LU7 Tourism and countryside recreation in the catchment has increased in recent years, and there are likely to be increasing pressures in the future. The catchment's rivers and watercourses are an integral and attractive part of the countryside scene, and are likely to play an increasingly important role in tourism and water-based recreation. The Agency will liaise with Local Authorities and developers to ensure such developments are sympathetically designed and located to take into account the safeguarding of the water environment, and where possible its enhancement. The development and promotion of water-based recreation facilities such as riverside footpaths and canoeing should take into account the need to safeguard the catchment's riverine habitats. Sensitive areas should be protected from recreational pressure, and should be targeted for monitoring.

- e.g. **Nottinghamshire Structure Plan Review** **Policies 7/1, 7/5**
Newark & Sherwood Local Plan (Deposit Draft) **Policy T01**
Derbyshire Structure Plan (Consultation Draft) **Policy LT3**

Activity Plans

Resolution of the 35 key issues detailed in the following tables will be the means by which the plan will be implemented. Issues 34 and 35 have been added and Issues 1, 19, 21, 24, and 27 have been modified as a result of the consultation process.

The issues are presented with a number of actions, a target timetable and the identification of responsible parties. Where possible, costs have been outlined for the period covered by the plan. This does not necessarily reflect the total cost of the schemes and is sometimes a projected estimate to be more accurately costed later. This document is produced in good faith, recognising current priorities, both within the Agency and other organisations. The actions represent the non routine investment by the Agency and others over the next five years. Where possible, an entry has been made in the year column(s) to indicate times for identified actions, but many activities are either under development or ongoing and it is considered inappropriate to specify. All changes will be highlighted in the Annual Review.

Key

- Action in the year(s) indicated (cost figures given if known)
- U Unknown at this time
- R Recurring – no additional costs to annual budgetary provision
- + Action added as a result of consultation

NOTES ON ABBREVIATIONS

AB	Archaeological Bodies	LA	Local Authority
Abs	Abstractors (Licensed)	Lev	Levingtons
Agg Co	Aggregate Company	LG	Local Government
AWS	Anglian Water Services	LPA	Local Planning Authority
BW	British Waterways	MAFF	Ministry of Agriculture, Fisheries and Food
CA	Coal Authority	MPA	Mineral Planning Authorities
CLA	Country Landowners Association	NCC	Nottinghamshire County Council
CO	Coal Operators	NFU	National Farmers Union
CC	County Councils	PC	Parish Council
CoCo	Countryside Commission	PWS	Public Water Supply
DC	District or Borough Councils	RED	Redevelopers
DMBC	Doncaster Metropolitan Borough Council	RL	Riparian Landowners
DoE	Department of the Environment	RSPB	Royal Society for the Protection of Birds
EA	Environment Agency	SC	Sports Council
EH	English Heritage	STW	Severn Trent Water Ltd
EN	English Nature	WLMP	Water Level Management Plan
EP	English Partnerships	WO	Waste Operator
FWAG	Farming and Wildlife Advisory Group	WT	Wildlife Trust
FCRN	Fisheries, Conservation, Recreation, and Navigation	VO	Voluntary Organisations
GBS	Governing Bodies of Sport	YWS	Yorkshire Water Services
IDB	Internal Drainage Board		

Issue: 1 Impact of British Waterways abstraction from the River Ryton at Workstop for the Chesterfield Canal.



Canal restoration work,
west of Workstop

British Waterways have rights to abstract water from the River Ryton at Branciff and Workstop incorporated into the Enabling Acts for the construction of the canal. A joint two year study into the operation of the water resource and demands relating to the canal is being undertaken with an objective of producing formal operating agreements for these River Ryton abstractions. These agreements will set out the conditions which will establish the split in flows between the canal and the river.

a) effects of abstraction on the River Ryton

During periods of low flow the canal can abstract the majority of the water within the River Ryton. This has an impact on the available dilution for the effluent from Manton STP, thereby affecting river quality. In conjunction with Issue 14 it is expected that agreements with STW Ltd and BW will ensure that acceptable dilution is available in both summer and winter dry periods.

b) abstractions for agriculture from the canal

Increased licensed abstraction from the canal will only be considered if protection is provided via a formal operating agreement for the canal, so as to ensure no adverse effect on both the canal and River Ryton.

c) quality of water imported to the canal

The canal itself is vulnerable to nutrients present in the Rivers Ryton and Idle, which may lead to a proliferation of plant growth and could threaten the SSSI. This aspect is being further studied as part of the nutrient review (Issue 15), the results of which will be incorporated into the consideration of the operating agreement.

d) restoration of further stretches of the canal

The canal is to be restored as far as Norwood Tunnel, but at present there are no proposals to link the west and east lengths of the navigation (west of Norwood Tunnel). The restoration of the canal between Workstop and Norwood Tunnel could change the pattern of canal water demands.

ACTIONS	RESPONSIBILITY		TOTAL COST (£K)	1996/97	1997/98	1998/99	1999/2000	2000/01	FUTURE
	LEAD	OTHER							
1. Secure formal operating agreement between Agency and BW.	BW/EA		U	•					
2. Review of other sources of water to feed canal.	BW/EA								
3. + Upgrade existing instrumentation (flow measurement for canal feeders and tributaries of the River Ryton.)	BW	EA	25	25					
4. + Investigate group licence for abstractors from the Chesterfield Canal.	EA	BW	U						•

Issue: 2 Lack of water resources to meet demand.

5

Both surface and groundwater resources have been progressively and extensively developed over time.

Historical over-exploitation of the Sherwood Sandstones aquifer now prevents further licences being granted for groundwater abstraction. The same over-abstraction has led to a reduction in baseflow in those watercourses draining the aquifer and as a consequence either no more surface water licences are being issued in some areas, or licences are still being issued in other areas but with a clause introduced into the licence which restricts abstraction during periods of low flow.

For the Lower Magnesian Limestone aquifer, which is less developed than the Sherwood Sandstones aquifer, future groundwater development, necessary to meet local demand, may have to be limited in order to maintain baseflow and essential dilution water for effluents in the watercourses draining eastwards over the Sherwood Sandstones.

There is a strong persistent demand for additional resources, both surface and groundwater, to be made available for agricultural and horticultural usage over most of the catchment; industrial demand is also strong especially in the Mansfield area.

ACTIONS	RESPONSIBILITY		TOTAL COST (£K)	1996/ 97	1997/ 98	1998/ 99	1999/ 2000	2000/ 01	FUTURE
	LEAD	OTHER							
1. Assess the feasibility of developing additional sources to meet demand, but noting the need to always protect the overall water environment (of new resources – winter storage reservoirs, conjunctive use of surface and groundwater).	EA	STW AWS YWS NFU CLA Others	U		•				
2. + Maintenance of groundwater to sustain calcareous flush communities at SSSIs.	EA	EN RL	U						

Others refers to the Coalfield Community.
Costs to the developer are unknown.

Issue: 3 Reduced groundwater levels in the Sherwood Sandstones groundwater management units, particularly the Doncaster unit.

Reduced groundwater levels are a problem in the Sherwood Sandstones Groundwater Units, particularly the Doncaster Unit, principally due to over abstraction for Public Water Supply.

a) non-sustainability of wetland sites caused by falling groundwater levels in the Doncaster Groundwater Unit.

It is alleged that falling groundwater levels are affecting the sustainability of wetland sites, such as Hatfield Moors. Hatfield Moors is a raised mire and is currently used for peat extraction for the horticultural industry. Parts of the site have been drained for the milling of peat, but others are untouched and have the ability to sustain levels. However, groundwater levels in the underlying sandstone, which would have been in continuity with the base of the peat, have now fallen and the future restoration of the site is in question. There are other wetland sites in the area which have also suffered a drop in levels and are in danger of drying out.

b) Long term effects of negotiated reduction in Public Water Supply abstraction

Due to the existence of large Licences of Right, issued as a result of the Water Resources Act 1963, the groundwater within the Sherwood Sandstone in the area to the south and east of Doncaster has been heavily exploited, with the rate of abstraction far exceeding the long term rate of recharge. The former NRA has negotiated new licensed quantities with Yorkshire Water Services (YWS) and achieved substantial reductions in actual abstraction. The long term effects of the recent reduction in abstraction and other influences are unknown.

These problems also apply to the four northern management units of the Sherwood Sandstone, which are Doncaster, Ranskill, Clumber and Clipstone and a similar approach will be taken to solving them there. Please note that these units are currently under review and may be renamed, with different boundaries (see (c) below).

c) Review of Groundwater Management Unit boundaries

A mathematical model designed specifically for this area by the University of Birmingham has presented a more accurate understanding of groundwater flows and the revision of the unit boundaries should now be considered.

ACTIONS	RESPONSIBILITY		TOTAL COST (£K)	1996/ 97	1997/ 98	1998/ 99	1999/ 2000	2000/ 01	FUTURE
	LEAD	OTHER							
1. Detailed hydrogeological investigation to assess the hydraulic continuity between the wetland sites in the superficial deposits and underlying Sherwood Sandstones.	EA	EN	60	60					
2. Monitor long term changes in groundwater levels in the Sherwood Sandstones and streamflows.	EA		40		20	20			

Issue: 4 Hydraulic relationship between rivers and some public water supply boreholes, adjacent to rivers, is imprecisely known.

Most of the rivers in the catchment traverse the Sherwood Sandstone aquifer. The aquifer is a vital source of potable water to the three major public water supply companies operating in the area.

Due to the relatively permeable nature of the river beds and the high rate of groundwater pumping, river water at some sites is induced into the boreholes. The regrading of river beds, necessary at some locations due to mining subsidence, can also increase the rate of leakage. The mechanism, extent and impact of this leakage is, however, neither well documented nor known.

ACTIONS	RESPONSIBILITY		TOTAL COST (£K)	1996/ 97	1997/ 98	1998/ 99	1999/ 2000	2000/ 01	FUTURE
	LEAD	OTHER							
1. Detailed site specific investigation involving streamflow measurement water quality studies, geophysical loggings etc.	STW AWS	EA	U 10	• 10					

Issue: 5 Dewatering activities associated with mineral extraction.

The extraction of minerals (primarily sands and gravels, and limestone) below the water table invariably necessitates dewatering activities. The water is often pumped into an adjacent watercourse and therefore represents, for most of the time, a loss of groundwater resources; only when there is a low flow problem in the receiving watercourse does any benefit accrue. Every effort should be made to introduce the pumped groundwater back to the underlying aquifer, especially in those areas where the aquifer is already fully or over-exploited. Dewatering can result in desiccation of adjacent wetland sites.

For those quarried areas where the water table is close to the surface, the increasing lack of inert waste available to restore the land to original ground level necessitates restoration to either wetland or to low level agriculture. If it is the latter, at some sites the aggregate companies wish to pump in perpetuity in order to depress the water table to an acceptable level to facilitate agricultural usage. This can again, for most of the year, result in a loss of groundwater resources, unless action is taken to re-introduce the water back to the aquifer at an appropriate location.

There is a prevalence of historical Interim Development Orders (IDOs) and other new proposals for sand and gravel extraction on the aquifer. If progressed, there will be a significant loss of surface protection of the aquifer. Problems of backfill on the aquifer could lead to low level restoration over wide areas.

The Environment Act 1995 introduced new requirements for an initial review and updating of old mineral planning permissions and periodic review of all mineral permissions thereafter. This came into force on 1 November 1995, to ensure that conditions attached to mineral permissions do not become out of date with respect to effects on the environment.

ACTIONS	RESPONSIBILITY		TOTAL COST (£K)	1996/ 97	1997/ 98	1998/ 99	1999/ 2000	2000/ 01	FUTURE
	LEAD	OTHER							
1. + Develop and continue liaison arrangements with MPAs to take into account the need to protect the broad water based environment when considering planning applications (during quarrying and restoration phases).	EA	MPA AggCo	R	*	*	*	*	*	*
2. + Identify where there is a requirement for the use of conservation notices in respect of potential mineral extractions issued under Section 199 of the Water Resources Act 1991.	EA		R	*	*	*	*	*	*

Issue: 6 Management of water releases from high level watercourses into lowland drains and the licensing of subsequent abstractions.

At strategic locations within the Isle of Axholme, during summer dry weather conditions, water can be discharged by gravity from high level watercourses, like the River Torne, to the low level drains. This water is used for irrigation either by returning to the field drainage systems or by spray irrigation. Releases are controlled by the Agency in liaison with the Internal Drainage Boards (IDBs) and farmers, to return water to manage water levels. Sufficient water must be retained in the high level channels to allow for weed maintenance and meet other abstraction needs. In both the high and low level systems, water levels must be kept within limits which allow flora and fauna to flourish. In winter and other wet periods, the low level drains need to be pumped out into the high level, and from the high level into the River Trent to avoid flooding of land and buildings. Water levels are maintained at lower levels in winter, than in summer, so that some flood flows can be stored.

The optimum operating levels to take account of all of these interests are being determined in the Hatfield Chase Water Level Management Plan (WLMP). Water quality concerns related to the acidity and dissolved metals content of the high level water will need to be studied further. The irrigation demands are being addressed through a programme of water resources modelling and licensing policy determination.

ACTIONS	RESPONSIBILITY		TOTAL COST (£K)	1996/97	1997/98	1998/99	1999/2000	2000/01	FUTURE
	LEAD	OTHER							
1. Improve resources model of system draining to Keadby and to maintain water quality standards and targets.	EA		60	•	•				
2. Carry out ecological survey of drains to monitor effect of changing water levels on aquatic ecology of system.	EA	IDB EN	4	2	2				
3. + Implement recommendations of data review project – install level monitoring and flow monitoring instrumentation.	EA	IDB EN	107	40	67				
4. + Produce WLMP for Hatfield Chase drainage system.	EA	IDB CoCo	3	2	1				
5. Development of operating rules for individual 'let back' sites.	EA	IDB	U	•	•				
6. As a result of Action 4 – drawing up/implementing a new licensing policy for surface water abstraction.	EA	Abs	U			•	•	•	•

Issue: 7 The loss of flow in the River Idle between Mattersey and West Stockwith and associated quality problems.

For several weeks each summer, there is no flow discharging from the River Idle into the River Trent. Flows appear to be lost between Mattersey and West Stockwith on the River Idle. Some of the loss in flow can be accounted for by surface water abstraction but not all. A lack of flow can result in quality problems, leading to a failure of the RE (Rivers Ecosystem) classification. The loss in flow at the downstream end of the river leads to eutrophication, which has implications for recreational use. Quality problems could, in turn, have detrimental effects on fisheries and the loss in flow could also be having an effect on the River Idle Washlands SSSI, downstream of Bawtry.

ACTIONS	RESPONSIBILITY		TOTAL COST (£K)	1996/97	1997/98	1998/99	1999/2000	2000/01	FUTURE
	LEAD	OTHER							
1. Carry out detailed investigations using flow measurement and metering techniques of licensed abstractions (in terms of rate and time of occurrence). Detailed investigation is also required of the 'let back' abstractions.	EA	Abs	5		5				
2. Development of operating rules for individual 'let back' sites.	IDB		U						•

'let back' refers to water 'let back' from the Main River into the IDB drainage systems for abstraction.

Issue: 8 Low flows in Rainworth Water.

Due to groundwater abstraction from the Sherwood Sandstone aquifer, baseflow in Rainworth Water has been virtually eradicated. During most of the year any flow which now occurs is primarily effluent from STPs at Rainworth and Bilsthorpe. The recent closure of Rufford Colliery has resulted in the cessation of discharge of colliery water to the watercourse and this has exacerbated the situation. A lack of flow has led to a shortage of water being available to satisfy surface water licences; there are also water quality and amenity problems. Only when the watercourse is joined by the Gallow Hole Dyke, immediately upstream of Rufford Lake, is the flow satisfactory for most of the year. However, the additional flow is occasionally insufficient to satisfy the many environmental requirements of the lake, which is part of a major Country Park attracting many visitors. Periodic mining subsidence under the lake also causes a lowering of lake levels by creating fissures which exacerbates leakage from the system. Mining subsidence is also known to occur upstream of Rufford Lake.

Rainworth Water is on the national 'top 40' list of watercourses which are adversely affected by low flows. Further investigation is required to determine whether there is justification in introducing an 'ALF' (Alleviation of Low Flows) scheme to part, or all, of the watercourse. See Issue 15 b) for Rainworth Lakes SSSI.

ACTIONS	RESPONSIBILITY		TOTAL COST (£K)	1996/ 97	1997/ 98	1998/ 99	1999/ 2000	2000/ 01	FUTURE
	LEAD	OTHER							
1. + Identify and evaluate benefits from a flow augmentation scheme.	EA NCC	Rufford PC	R	•					
2. + Define and agree most favourable option.	EA NCC		R		•				

Issue: 9 Elevated nitrates in groundwater.

The Sherwood Sandstone aquifer in the area is covered with a light sandy soil which is suitable for arable agriculture. This has resulted in high nitrate leaching and elevated concentrations of nitrate in the groundwater that is extensively used for public supply by both Severn Trent Water (STW), Yorkshire Water Services (YWS) and Anglian Water Services (AWS). The need to supply water with a nitrate concentration of less than 50 Mg/l (as NO3) has required a blending strategy to be implemented. If the nitrate concentrations continue to rise, this strategy would be unable to maintain the correct concentrations without the provision of nitrate removal plant. To maintain the present strategy and to minimise the need for further plant, it is desirable to reduce the input of nitrate from agricultural sources. The EC Nitrate Directive requires the designation as Nitrate Vulnerable Zones (NVZs) all known areas of land that drain into waters where the nitrate concentrations exceed or are expected to exceed 50 Mg/l as a result of agricultural activities (see Section 5.1.2 of Consultation Report – Groundwater Quality).

ACTIONS	RESPONSIBILITY		TOTAL COST (£K)	1996/ 97	1997/ 98	1998/ 99	1999/ 2000	2000/ 01	FUTURE
	LEAD	OTHER							
1. To assist in the review of the designation of aquifer outcrop as a NVZ.	DoE	MAFF EA	U	•	•				
2. To assist in the designation of Nitrate Sensitive Areas (NSAs) around specific boreholes, where appropriate.	MAFF	EA	U	•	•	•	•	•	•

Issue: 10 Impact of contaminated land on the environment.

Industrial dereliction and waste disposal in the catchment has resulted in contamination of land in several locations with waste containing substances which are potentially hazardous to the water environment. Advice will be given pertaining to the full spectrum of the Agency's responsibilities.

There are sites where former activities have left residual contamination and where disturbance or redevelopment might lead to a serious risk of deterioration in water quality. The Agency will seek to use redevelopment opportunities to agree remediation measures to eliminate the risk of pollution. Where appropriate, it may be necessary to instigate remedial works on operational land.

Among the areas of concern are the disused coal carbonization plants on several of the colliery sites such as Thoresby, Mansfield, Harworth, Thurcroft and Ollerton. The site at Mansfield is being investigated under a European Fund Research Grant.

ACTIONS	RESPONSIBILITY		TOTAL COST (£K)	1996/97	1997/98	1998/99	1999/2000	2000/01	FUTURE
	LEAD	OTHER							
1. Work with LAs and others to establish a mechanism for undertaking the remediation of contaminated land sites.	EA	RED LPA EP	R	•	•	•	•	•	•

Issue: 11 Potential impact of the spreading of industrial effluent to land.

There is concern given the high vulnerability of much of the groundwater and the need to protect surface water that the practice of spreading industrial effluent onto land is carried out in a way and in locations which will not affect water resources.

There are two sites at Hodsock and Worksop, where liquid effluent from food processing is regularly sprayed onto agricultural land for disposal. The effluents are currently under investigation with a view to consenting them.

In addition, there are a wide range of other wastes (liquids and sludges) from various activities, such as abattoirs and food processing which are spread at many sites across the catchment. Subject to immediate prior notification to the Waste Regulation function of the Agency, there is a requirement only that the waste should be 'of agricultural benefit'.

ACTIONS	RESPONSIBILITY		TOTAL COST (£K)	1996/97	1997/98	1998/99	1999/2000	2000/01	FUTURE
	LEAD	OTHER							
1. Investigate appropriateness of regulatory controls for permanent discharges.	EA		U	•	•	•	•	•	•

Issue: 12 The need for setting of appropriate RQOs to meet the needs and uses of the river catchment.

Most of the tributaries feeding the Rivers Idle and Torne rise to the west of the catchment a short distance upstream of towns such as Mansfield, Worksop, Maltby and Doncaster. These tributaries include the Rivers Maun, Meden, Poulter, Ryton, Maltby Dyke and Mother Drain.

The tributary headwaters are of mostly good quality but the distribution of urban areas in the catchment is such that most receive significant discharges of treated sewage effluent in low river flow dilution close to source, eg Sutton in Ashfield and Mansfield on the River Maun, Worksop discharging to River Ryton, Maltby to Maltby Dyke, Balby (South Doncaster), Harworth and Warmsworth all discharging sewage effluent in the headwaters of the River Torne catchment. There is a consequent deterioration to fair quality with recovery to support EC designated fisheries further downstream.

The method of classification and setting of river quality objectives (RQOs) has been revised by the Agency as the former NRA through implementation of the Rivers Ecosystem (RE) scheme, the background to which are given in Section 5.1.1 of the Consultation Report in Table 5 (see also Appendix 1).

The RQOs for each river are intended to be realistic and have been assigned bearing in mind the needs and uses of each section of river. It should be noted that in some cases short term RQOs have been set; these are designed to be achievable within the constraints of committed investment (see Issue 13).

ACTIONS	RESPONSIBILITY		TOTAL COST (£K)	1996/ 97	1997/ 98	1998/ 99	1999/ 2000	2000/ 01	FUTURE
	LEAD	OTHER							
1. Review the appropriateness of the RQO, given that there has been a translation from one system to another, to meet the needs and uses of the river system.	EA DoE		R	•					
2. Identify reaches where short term RQOs will be required and prioritise for submission on AMP3 programme.	EA		R	•	•				
3. Obtain statutory WQO status.	DoE		U						•

Issue: 13 The need to prioritise sewage treatment and sewerage improvements.

The Catchment is served by many sewage treatment plants (STPs), 30 of which are significant. Most of the urban areas served are also drained by a network of combined sewerage systems. The STPs and the majority of the infrastructure assets are vested in the statutory water undertakers (STW and YWS in South Doncaster). The quality of sewage effluent discharged is the single most important determining factor in river quality in this catchment. Many of the assets require improvement in order to achieve and sustain the identified RQOs.

The Water Company investment programme for the period 1995-2000 has been determined by OFWAT, through the Asset Management Planning process (AMP2).

Environmental requirements, including the implementation of the EC Urban Waste Water Treatment Directive (UWWTD) are contained in agreed AMP2 Guidelines for Effluent Quality. The AMP2 National Environment Programme is the means by which expenditure by Water Companies on environmental improvement is determined. AMP2 plans include provision for improvements to ensure compliance with all UK and European statutory obligations. The funding of improvement schemes to meet non statutory requirements such as RQOs however is limited to a number of discretionary schemes agreed between the DoE, the Agency and the relevant Water Company.

Tighter discharge standards have been agreed under the AMP2 process to meet statutory obligations at STPs such as Sutton in Ashfield, Armthorpe, Hodsock and Retford.

In cases where the criteria required for AMP2 expenditure are not met and discretionary scheme investment has not been agreed, short term RQOs have had to be set. The Agency will continue to monitor the effects of discharges and prioritise the need for imposition of tighter standards within AMP3 (2000 – 2005) to meet long term RQOs, eg River Maun below Mansfield and River Ryton below Worksop.

In order to sustain quality objectives, improve the aesthetic appearance of rivers and address public complaints, improvements to sewerage systems are also necessary. However, the financial constraints of the AMP2 programme has meant a need to assign priorities to the identified problem combined sewer overflows (CSOs). Significant sewerage improvements have been agreed under AMP2 at Sutton in Ashfield and Mansfield.

ACTIONS	RESPONSIBILITY		TOTAL COST (£K)	1996/97	1997/98	1998/99	1999/2000	2000/01	FUTURE
	LEAD	OTHER							
1. Monitor the implementation and effects on water quality of improvements agreed under AMP2.	EA		R	•	•	•	•	•	•
2. Review the quality effects of STP effluent discharge.	EA		R	•	•	•	•	•	•
3. Identify priorities for future investment.	EA		U	•	•	•	•	•	•

Issue: 14 Need for optimisation of the compensation flow from the public water supply source at Manton into the River Ryton.

Historically, good quality groundwater has been pumped out of one of the shafts at Manton Colliery in order to facilitate coal mining operations. Approximately 70% of the pumped water went for public supply with 30% discharged, as surplus, to the River Ryton. Such shaft pumping was exempt from licensing until 1994, when, upon the cessation of mining activities, pumping for public water supply, necessitated a licence (there was already a surface water licence for public supply).

STW now have a licence to abstract groundwater from a shaft at the closed Manton Colliery. A clause in the time limited licence, permitting abstraction, requires a compensation flow of 5 Ml/d to be discharged into the River Ryton on a continuous basis which mirrors what was happening when the colliery was operational. The discharge however represents a waste of groundwater resources except for those periods when there is a low flow problem in the River Ryton. A more flexible discharge is therefore required with probably a higher discharge required from Manton during parts of the summer period to meet effluent dilution requirements at Manton STP and also the downstream spray irrigation demands plus a much lower (or nil) discharge in winter.

ACTIONS	RESPONSIBILITY		TOTAL COST (£K)	1996/97	1997/98	1998/99	1999/2000	2000/01	FUTURE
	LEAD	OTHER							
1. Joint study to assess the amount of water being pumped out of the Manton Shaft that is required as compensation flow in the River Ryton in order to protect the water environment.	EA STW		R	•					
2. + Issue a licence for public water supply abstraction—as a consequence of Action 1.	EA	STW	R	•					

Issue: 15 Eutrophication in the catchment.

5

There is evidence of eutrophication in Kings Mill Reservoir which has been designated a Sensitive Area (Eutrophic) (SA(E)). Other waters may be candidates for designation under the EC Urban Waste Water Treatment Directive (UWWTD) (91/271/EC) and are being assessed. Designation as SA(E) would require phosphate removal to Directive standards, unless it could be demonstrated that such removal would have no effect on eutrophication.

a) Kingsmill Reservoir

Discharge of sewage effluent from Sutton in Ashfield sewage treatment plant (STP) to Kingsmill Reservoir in low dilution has led to the enrichment of nutrients and consequent eutrophication in the reservoir and the prevalence of blue green algal blooms in summer. This creates a potential health risk to users of the reservoir as well as being aesthetically unacceptable and polluting.

The reservoir has been designated a SA(E) and various possible measures have been identified including extended treatment, effluent diversion, and so on, to alleviate the problem. The options have been discussed in detail in tripartite forum involving Ashfield District Council, Seven Trent Water Ltd, (STW) and the Agency.

Further investigation is being undertaken by Ashfield District Council to establish the nutrient content of the silt bed and by the Agency to establish the likely impact of the various options. In order to comply with the Directive, STW are required to undertake ameliorative work by 1998. The option they have chosen to pursue is to improve the STP and discharge the treated effluent downstream of the reservoir.

ACTIONS	RESPONSIBILITY		TOTAL COST (£K)	1996/ 97	1997/ 98	1998/ 99	1999/ 2000	2000/ 01	FUTURE
	LEAD	OTHER							
a. Kingsmill Reservoir									
1. Identify measures required to remove or reduce nutrient inputs and prevent eutrophication including the development of blue/green algae.	EA STW		R	•					
2. Divert and improve STP effluent, improve upstream sewerage systems.	STW		3000	•	•	•	•		
3. Remove basal silt. Investigation to be carried out by Ashfield DC.	DC		U	•					
b. Other locations									
4. Assess damage to SSSI from eutrophication.	EA	EN	10		5	5			
5. Review data in 1997 for possible inclusion in action programme under EC UWWT Directive (91/271/EEC)	EA DoE		R	•	•				
6. Removal of nutrients to prevent eutrophication as a result of Action 5 (costs depend on result of review).	EA STW		U			•			

b) Other Locations

The Idle Catchment generally, including the Chesterfield Canal receives a high proportion of sewage effluent which in turn leads to high concentrations of nutrients. These waters may therefore be granted sensitive status for the purpose of the Directive.

The first review of SA(E) designation under the Directive will be in 1997 and accordingly the Agency will be gathering chemical and biological data, including nutrient and macrophyte information at several locations in the catchment to assist in the decision making process for designation of future candidate sensitive areas.

There are several SSSIs in the catchment at risk from water quality problems and eutrophication. These are: Rainworth Lakes, Hollinghill and Markland Grips, Potteric Carr, Maltby Low Common, Roche Abbey Woodlands, Sandall Beat and Anston Stone Wood, as well as the Chesterfield Canal.

Issue: 16 Impact of discharge of minewater from current coal mining operations.

There are 10 collieries which discharge into the Idle/Torne Catchment and two other disused collieries which continue to pump minewater. The discharge of minewater which is frequently saline, can be ferruginous (containing iron), and contain elevated levels of ammonia. In some discharge locations the minewater provides useful dilution, in other circumstances the minewater is problematic because of high salinity or other chemical constituents which may potentially affect river quality and/or use, including potentially detrimental effects on the freshwater ecosystem and catchment users concerned. In particular, spawning success and fry survival are likely to suffer from such discharges.

ACTIONS	RESPONSIBILITY		TOTAL COST (£K)	1996/97	1997/98	1998/99	1999/2000	2000/01	FUTURE
	LEAD	OTHER							
1. Review impact of each discharge on watercourse and revise consents where necessary.	EA		R	•	•	•	•	•	•
2. Assess implication of future colliery closures. (See also issue 17)	EA		R	•	•	•	•	•	•



Clipstone Colliery

Issue: 17 Impact of colliery closures.

For many years the Nottinghamshire/South Yorkshire Coalfield has been an important coal mining area. Map 14 in the Consultation Report indicates the extent of former coal mining in the catchment. Many of the collieries indicated on the map pumped minewater which was and is in some cases discharged to the river catchment. In certain locations the consequent increase in river flow was advantageous, diluting sewage effluent for example, but more frequently in this catchment the reduction in chloride, iron and/or ammonia in the river, following the cessation of minewater pumping, has been beneficial.

In some areas of the country the cessation of pumping could, in the long term, lead to uncontrolled re-emergence of minewater. The Environment Act 1995 does not provide effective controls over discharges from mines abandoned before the end of the millennium, nor does the Coal Industry Act give legal responsibility to the Coal Authority to deal with existing discharges from abandoned mines. However, in this Nottinghamshire Coalfield many of the collieries are interconnected underground and it is unlikely that following the recent colliery privatisation programme minewater pumping will cease in the short term. The emergence of minewater is not therefore anticipated in this catchment. There is a possibility that flooding of old workings in the western part of the catchment could raise the potential hydrostatic head and cause upwelling of minewater into the overlying aquifers and thereby contaminate public water supplies. This possibility is thought to be quite remote but is an issue of considerable importance which is being investigated further. The Agency nevertheless will consider in detail the water implications of each colliery closure and is studying the possible effects of future coalmine closures.

ACTIONS	RESPONSIBILITY		TOTAL COST (£K)	1996/97	1997/98	1998/99	1999/2000	2000/01	FUTURE
	LEAD	OTHER							
1. Investigate loss of resource to river and possible emergence of uncontrolled pollution within the catchment.	EC CA CO		45	15	15	15			
2. Undertake remediation measures to protect water quality. (cost dependant on Action 1 above). *	EA/CA		U				•	•	•

* After production of the Consultation Report for the Idle/Torne CMP, the former NRA published a report entitled 'Colliery Closures in the Midlands', which included an initial overview of the potential impact of the recent colliery closure programme. The report recognised the strategic need to gather data on the Nottinghamshire/South Yorkshire coalfield as an aid to the predictions of effects of future operational changes and long term decommissioning. The Agency intend to issue an Action Plan in early 1997, designed to predict environmental impacts and to enable the planning of remedial measures where necessary.

colliery closures

Issue: 18 Inadequate foul and surface water disposal at a number of small developments.

Several developments in the catchment are served by inadequate foul and/or surface water drainage arrangements. In some cases the drainage systems have not been adopted by the water undertaker and this has led to difficulties in assigning responsibility for drainage. Pollution problems have arisen on industrial estates through poor operational practice, spillages and wrong connections, eg Hellaby, Warmsworth, North Anston and West Carr Industrial Estate at Retford. Inadequate drainage can render industrial estates unsuitable for certain types of development.

In other cases, such as the development of restaurants and hotels around the A1 Markham Moor roundabout, inadequate foul drainage has led to the proliferation of small sewage treatment plants. The widely variable loads discharged to the private STPs here have exacerbated inconsistencies in treatment performance leading to intermittent public complaint and pollution.

ACTIONS	RESPONSIBILITY		TOTAL COST (£K)	1996/97	1997/98	1998/99	1999/2000	2000/01	FUTURE
	LEAD	OTHER							
1. Identify sites by undertaking pollution audit of businesses on each of the estates.	EA STW LA		R	•	•	•	•	•	•
2. Establish a plan for each site identified in 1. above.	EA LA		R	•	•	•	•	•	•
3. Establish a plan for the following categories of future developments:									
i. sewage and effluent disposal facilities;	EA/LA		R	•	•	•	•	•	•
ii. oil and chemical storage and handling facilities.	EA/LA		R	•	•	•	•	•	•

foul &
surface
water

Issue: 19 Impact of managed land drainage and peat cutting on water quality in the Torne catchment.

Land drainage within the Isle of Axholme has a water quality characteristic of the rich peat deposits which occur on the moorlands and also underlie much of the fertile agricultural land. Peat cutting operations on Hatfield Moors have been carried out for centuries. Increased operations over the last few years have accelerated alterations in drainage and this may have become potentially damaging to downstream water quality particularly in terms of the release of ammoniacal nitrogen. Humic and fulvic acids from the peat reduce the pH of water in the ground which mobilises metals. Polluted water can then drain into watercourses via land drains. The metals tend to precipitate out in the higher pH conditions of the watercourse and the precipitate can blanket the bed. Such phenomena occur mainly in the winter months and could be related to the pumping regimes at Agency and IDB operated pumping stations.

Invertebrate and plant life within the watercourse are affected by blanketing and also possible toxicity effects from metals such as aluminium, which can occur at very high levels. The land drainage also contains ammonia, increased ammonia levels being partly responsible for the lower overall quality of watercourses in the area than would be expected in a predominantly rural catchment. The fishery is likely to be affected by the toxic effects of these metals and elevated levels of ammonia. The detrimental effect on the fishery is most likely to manifest itself in poor recruitment and low levels of fry survival over a number of years, rather than in sudden, acute mortalities. These problems may be exacerbated by the pumping regimes designed principally for agricultural benefit.

ACTIONS	RESPONSIBILITY		TOTAL COST (£K)	1996/97	1997/98	1998/99	1999/2000	2000/01	FUTURE
	LEAD	OTHER							
1. Investigate further cause of pollution from land drainage and instigate pilot study on designated part of catchment to examine effects of changing pumping regime. To be instigated through WLMP.	EA		R	•	•	•	•	•	•
2. Control drainage related to peat cutting operations either by consent or preferably recycling.	EA	Operator	R	•	•	•	•	•	•
3. + Develop catchment model for River Torne.	EA		30		30				

Issue: 20 Groundwater Quality is at risk.

A large part of the catchment is underlain by the Sherwood Sandstones Aquifer, with 31 abstraction borehole sites supplying STW, YWS and AWS.

Groundwater pollution has occurred in the past, for example at Clipstone and Harworth. The remediation of groundwater is a difficult, costly and often impractical operation. The prevention of groundwater pollution is therefore vital.

Following publication of the NRA's Groundwater Protection Policy, computer modelling techniques have been used to delineate catchment zones of major water supply boreholes on the sandstone aquifer.

The risk of pollution of groundwater will be assessed by field surveys so that pollution prevention measures can be requested where necessary. Examples of sites concerned will include petrol stations, industrial sites and farms. Contingency procedures for dealing with emergency spillage to land, sometimes involving other emergency services, will be reviewed.

ACTIONS	RESPONSIBILITY		TOTAL COST (£K)	1996/97	1997/98	1998/99	1999/2000	2000/01	FUTURE
	LEAD	OTHER							
1. Define Source Protection Zones (SPZs) around major PWS boreholes.	EA		150*	•	•				
2. Undertake groundwater pollution prevention surveys within SPZs.	EA		U	•	•	•	•	•	•

* This is the amount being spent regionally, a portion of which will be used in this area.

groundwater
quality

Issue: 21 Effects of coal mining subsidence on the water environment

The catchment areas of both the Rivers Idle and Torne have been long associated with coal mining operations. The impact of subsidence, resulting from mining, on a river can be severe, as a lowering of the bed and banks is not usually accompanied by a corresponding lowering of water level and the fall on the river can therefore be negated or even reversed. If remedial works are not carried out, there can be an increased risk of flooding to riverside land and property. However, river regrading schemes to remedy the above effects can be environmentally damaging and in some cases even put at risk the continued use of groundwater supplies by uncovering fissures caused by the ground movements. This can lead to a potential for pollution of groundwater (see also Issues 10 and 20). It is important to consider carefully what remedial works are appropriate for each situation, including the 'do nothing' option. The effects of subsidence also have potential water quality impact by occasionally threatening effective performance of STPs by causing the treatment plant to tilt, for example at Edwinstowe STP.

As well as quality implications being created by subsidence, fissures can also lead to an unacceptable loss of water to the underground strata. An example of such a loss is the Bondhay Dyke, a tributary of the River Ryton, where the watercourse can be dry over large stretches leading to environmental damage and the inability of abstraction licence holders to use their licences.

Following privatisation of the coal mining industry, the private coal operators became responsible for remedial works and are regulated by the Coal Authority. A remedial scheme has been carried out at the expense of the private coal operator RJB Mining (UK) Ltd, on the River Maun, upstream of the A614 trunk road at Ollerton and discussions are taking place on other schemes.

A large scale remedial scheme for mining subsidence on the River Idle at Gamston was proposed by British Coal in the early 1990s, but protracted land compensation negotiations with riparian owners has delayed the proposed works. The Coal Authority has indicated that it hopes to carry out the works during 1996/7.



Mining subsidence on the River Idle at Gamston

It is also necessary to ensure that the ecological importance of subsidence flashes, such as Gamston, are not destroyed through remedial works.

ACTIONS	RESPONSIBILITY		TOTAL COST (£K)	1996/97	1997/98	1998/99	1999/2000	2000/01	FUTURE
	LEAD	OTHER							
1. Identify potential areas of mining activity and investigate the impact of subsidence where it affects Main Rivers and serve damage notices as necessary.	EA	CO CA RL	30	10	10	10			
2. + Complete design and undertake mining subsidence remedial works on the River Idle at Gamston.	CA		850	500	350				
3. + Undertake mining subsidence study in the Bondhay Dyke catchment.	EA		13	13					

Issue: 22 There is currently no flood warning scheme.

There is currently no flood warning scheme operating for the River Idle and its tributaries, or for the River Torne. The main purpose of such a scheme would be to forecast floods and issue warnings for properties undefended from flooding, or those at risk from overtopping of flood defences.

ACTIONS	RESPONSIBILITY		TOTAL COST (£K)	1996/97	1997/98	1998/99	1999/2000	2000/01	FUTURE
	LEAD	OTHER							
1. Investigate the introduction of a flood warning scheme.	EA		5	1	4				

Issue: 23 The extent of floodplains are not clearly defined.

Development in floodplains will be at risk of flooding and may increase the risk of flooding elsewhere by reducing the storage capacity of the floodplain and/or by impeding the flow of floodwater. Land raising in the floodplain may have a similar effect.

Guidance for Local Planning Authorities (LPAs) on protection of floodplains is contained in the Department of the Environment Circular 30/92 'Development and Flood Risk'.

The Agency looks to the LPA to resist development in such locations. Redevelopment of existing sites should only be considered where the LPA, in consultation with the Agency, is satisfied that the developer will provide appropriate mitigation and/or protection measures. The Agency, as a consultee of the LPAs, seeks to prevent development encroaching into the floodplain to avoid any increase in flood risk to people and property. In order to control the floodplain effectively it is necessary therefore to have an accurate definition of its extent. The extent of the definitive 1 in 100 year return period floodplains are not currently adequately mapped for the main rivers within the Catchment.

ACTIONS	RESPONSIBILITY		TOTAL COST (£K)	1996/97	1997/98	1998/99	1999/2000	2000/01	FUTURE
	LEAD	OTHER							
1. Define the extent of floodplain to the 1 in 100 year return period by the construction of mathematical models and aerial survey.	EA	CoCo	300					100	200

Issue: 24 The need to reinstate and maintain the characteristic wildlife communities, landscape features and processes of the Rivers Idle and Torne.

Old title: (Degradation of physical diversity due to past flood alleviation schemes on Rivers Idle and Torne).

During the 1970s and 1980s, capital flood defence schemes were undertaken on both the Rivers Idle and Torne. By the late 1980s more sympathetic river works were undertaken, incorporating conservation enhancements.

The lower reaches of the River Torne are trapezoidal in character, with floodbanks set away from the river channel and very little tree cover. The River Idle, although more meandering, is also trapezoidal in character. Some improvements have been made with tree planting. The lack of physical diversity has had a detrimental effect on the entire ecosystem of the rivers, affecting plant communities, fish population, wildlife and landscape features.

ACTIONS	RESPONSIBILITY		TOTAL COST (£K)	1996/97	1997/98	1998/99	1999/2000	2000/01	FUTURE
	LEAD	OTHER							
1. Undertake rehabilitation of River Idle and rehabilitation feasibility of River Torne.	EA	CoCo	20	20					
2. Undertake ecological assessment (including landscape).	EA	CoCo	6	6					
3. + Determine programme of enhancement work at agreed sites.	EA		R		•				
4. + Support local groups in wetland creation and tree planting schemes.	EA LA		30	5	5	5	5	5	5
5. + Investigate use of Countryside Stewardship grants for land management on both rivers.	FWAG MAFF EA		U	•	•	•	•	•	•
6. + Develop FCRN Strategies for both rivers in liaison with Flood Defence to identify activities and actions to improve their FCRN value.	EA	CoCo	R	•	•	•	•	•	•

FCRN – Fisheries, Conservation, Recreation and Navigation.

Issue: 25 Potential conflict between interests in the pumped rivers.

The Rivers Torne and Idle are both pumped drainage systems. The adjacent land use relies on the management of the water levels of these systems to enable adequate drainage in the winter and provide water for irrigation in the summer. Drainage requirements for agriculture can be incompatible with the needs of conservation. Both rivers are leased to angling clubs and the River Idle has a right of navigation from West Stockwith to Bawtry. Conflicts can also arise with these interests when pumps operate.

The River Idle was the subject of a flood alleviation scheme in 1980 – 1993 and large areas of washlands, scheduled as SSSIs, were reduced by the provision of flood defences. A large pumping station was constructed at West Stockwith to evacuate water from the Idle to the tidal River Trent. The remaining four areas of SSSI washland were left unprotected but failed to flood regularly enough to retain the population of Bewick and Hooper swans who were winter visitors. In recent years, changes to the pumping regime and wet winter periods have resulted in the washland being flooded for longer periods of time.

Archaeological remains located in the floodplain are at risk of being lost unless the peat stays wet.

ACTIONS	RESPONSIBILITY		TOTAL COST (£K)	1996/97	1997/98	1998/99	1999/2000	2000/01	FUTURE
	LEAD	OTHER							
1. Produce WLMPs for Hatfield Chase Pumped Drainage System and River Idle (between Bawtry and West Stockwith) to ensure wildlife, archaeological, recreational and agricultural interests are fully considered and protected where appropriate.	EA	IDB RL LA	R	•					
2. + Implement recommendations from Hatfield Chase and River Idle WLMPs.	EA		20		5	5	5	5	
3. + Reconcile any differences between the WLMPs and any other interests.	EA	ALL	R	•	•	•	•	•	•

Issue: 26 Control of alien/invasive plant species.

There are sites in the catchment of the River Idle where Himalayan Balsam and Japanese Knotweed have been identified. Measures should be taken to control the spread of these plants because they:-

- grow densely, shading out native plants
- devalue the natural landscape
- could create a potential flood hazard if dead stems fall in and clog watercourses
- are invasive and require checking to prevent greater problems in the future

There are also considerable growths of water fern in the Warping Drain and Australian Stonecrop in the catchment of the River Tame. These should be controlled before they spread further.

ACTIONS	RESPONSIBILITY		TOTAL COST (£K)	1996/97	1997/98	1998/99	1999/2000	2000/01	FUTURE
	LEAD	OTHER							
1. Undertake surveys of all watercourses to identify problem areas.	EA		12		12				
2. Undertake programme of eradication through spraying and mowing.	EA	LA BW	U	•	•	•	•	•	•

Issue: 27 Biodiversity Action plans are required for the catchment for key species.

Old title: (Insufficient habitat to encourage the return of otters to the catchment)

It was considered necessary to expand this issue and completely reword it.

Biodiversity protection, following the Rio Earth Summit of 1992, has a high profile. National and Regional Biodiversity Action Plans are being produced by the Agency for target species listed below. Several county councils are also producing biodiversity action plans for their areas.

The following are key species in the catchment and their protection is a duty of the Agency:

Otters

There are habitat deficiencies in the catchment which discourages the return of this species. There are known to be otters passing through the area and improved bankside vegetation, provisions of otter holts, lack of sprainting sites and disposal of dredging are all issues which must be addressed if the species is to be re-established.

Water voles

This species is declining nationally and is threatened. There is a need to determine present populations and evaluate riparian management for the best practice to improve vole habitat.

Plants

The nationally rare pilwort was present in the Hatfield Chase pumped drainage systems in 1988, but has not been found since. Floating Water Plantain has been found in an IDB drain near Warping Drain. There are many rare plants in this system that require protection and possible re-location. Reedbeds are also a nationally scarce habitat and the creation of wetland areas to provide reedbeds should be examined.

Bats

Breeding and hibernation sites are few in the Hatfield Chase area.

The Agency will work together with other agencies in providing biodiversity species and habitat action plans.



Otter

biodiversity

ACTIONS		RESPONSIBILITY		TOTAL COST (£K)	1996/ 97	1997/ 98	1998/ 99	1999/ 2000	2000/ 01	FUTURE
		LEAD	OTHER							
Otters										
1.	Provide sprainting sites at suitable locations on rivers.	EA/EN	LA RL	7		5	2			
2.	Build 4 otter holts on River Idle.	EA/RL	EN	5		5				
3.	Undertake survey for otter movements.	EA/EN		10		5	5			
4.	+ Encourage scrub cover on banks by sensitive river management.	EA/RL	RL	R	•	•	•	•	•	•
5.	+ Ensure all use of fyke nets is monitored for use of otter guards.	WT/EA		R	•	•	•	•	•	•
Voles										
6.	+ Evaluate riparian management to improve vole habitats.	EA RL		R	•	•	•	•		
7.	+ Survey catchment to assess vole population.	EA		10		5	5			
Others										
8.	+ Undertake site management plans on all Agency owned land to protect conservation interests.	EA		10	2.5	2.5	2.5	2.5		
Plants										
9.	+ Survey and monitor watercourses known to have rare or scarce species.	EN/EA IDB		5		2	3			
10.	+ Undertake programme of translocation of rare species.	IDB EA		5		5				
11.	+ Investigate the creation of wetland areas, especially on the Upper Torne, to encourage reed bed development.	LA EA	EN CoCO MAFF	5	2	3				
Bats										
12.	+ Provide bat boxes on the network of pumping stations in the Hatfield Chase area.	EA IDB		7		5	2			

Note: Any conservation work undertaken should take account of flood defence works and should ensure that there is no increased risk of flooding to property, except where designed and specifically managed habitat such as wet land grassland.

Issue: 28 Litter and rubbish problems in and near rivers.

The rivers in the catchment all flow through urban areas at some point along their length. Waterborne litter can alter the public perception of rivers. It can also be harmful to livestock and wildlife. Litter campaigns should be encouraged in urban areas, using interested organisations from local community.

ACTIONS	RESPONSIBILITY		TOTAL COST (£K)	1996/97	1997/98	1998/99	1999/2000	2000/01	FUTURE
	LEAD	OTHER							
1. Support local initiatives in clearing small watercourses, as well as LA and Keep Britain Tidy Initiatives.	EA		5	1	1	1	1	1	
2. + Desilt stretches of watercourse that cause litter and rubbish to accumulate ie. Old River Idle arm at Bawtry.	EA		5		5				
3. + Promote education of recreational users to highlight problems of litter.	GBS	EA	10		5	5			

river idle &
torne
catchment

Issue: 29 Lack of recreational facilities and public access to rivers.

The Agency has provided car parks and stiles for fishermen and informal recreational users along the River Torne. However there is a lack of facilities for disabled anglers on all the rivers in the catchment. There is a need for provision of a linear walkway along the River Idle and tributaries, to link Greenwood Community Forest in the south to Sherwood Forest and the parks of the Dukeries further north, to the River Idle and on to the River Trent, linking to the Trent Valley Way at West Stockwith. There is a lack of footbridges and footpath routes along the River Torne, particularly in the Rossington to Tickhill area. The River Idle has an ancient right of navigation but there are no boating facilities along its length and there is no Navigation Authority.

ACTIONS	RESPONSIBILITY		TOTAL COST (£K)	1996/97	1997/98	1998/99	1999/2000	2000/01	FUTURE
	LEAD	OTHER							
1. Promote the creation of new footpath links on the Rivers Idle and Torne by consultation with the relevant local authorities.	EA LA RL	LG	R	•	•	•	•	•	•
2. Investigate sites for provision of disabled anglers pegs.	EA RL		R	•	•	•	•	•	•
3. Investigate the provision of mooring sites on River Idle.	RL Boat Club		U	•	•	•	•	•	•
4. + Promote and interpret the heritage aspects associated with footpath links.	EH/LA	EA	U	•	•	•	•	•	•
5. + Examine the status of current and proposed routes for horse riding.	LA	EA	U	•	•	•	•	•	•
6. + Support the initiatives of LAs and VOs on the Rivers Meden and Maun.	EA	NNT	10		5	5			
7. + Protect conservation interests at sensitive sites.	EA/EN		R	•	•	•	•	•	•
8. + Promote recreational use in the restoration proposals at mineral extractions sites.	LPA RL Agg Co	EA	R	•	•	•	•	•	•
9. + Support proposals for Greenwood Community Forest and other woodland initiatives.	EA/LA		R	•	•	•	•	•	•
10. + Provide facilities for recreational users on Agency owned sites: a) Bawtry; b) Warping Drain; c) River Idle; d) River Torne.	EA		25		5	10	5	5	
11. + Support canoe access agreements where appropriate.	EA/SC		R	•	•	•	•	•	•
12. + Promote recreational use and provision of facilities through discussion of interested parties.	LA/EA		2	2					

Note: Conservation interests will be taken into account in developing any new proposals.

Issue: 30 The need to protect and maintain the genetic integrity of native brown trout in the upper reaches of the River Idle tributaries.

Native brown trout are a species nationally threatened from the restocking of inappropriate species, pollution and loss of habitat. The upper reaches of the Rivers Meden, Poulter and Ryton still contain good stocks of such fish.

To protect and maintain these populations it may be necessary to prohibit the stocking of farm-bred trout into these rivers. Interaction between native and stocked fish may simply involve direct competition for food. However if stocked fish reproduce they will contribute significantly to future generations. The limited parental origin of farmed trout may result over time, in a significant reduction in genetic integrity.

Consideration needs to be given to the stocking of trout into other rivers in the catchment. This may involve the stocking of brown trout only, preferably of a local origin, and of a size comparable to the resident, wild fish.

The habitats required to support brown trout will also need protection, through the application of the Agency's regulatory powers. Monitoring is necessary to establish the continuing status of these stocks.

ACTIONS	RESPONSIBILITY		TOTAL COST (£K)	1996/97	1997/98	1998/99	1999/2000	2000/01	FUTURE
	LEAD	OTHER							
1. Determine genetic diversity of brown trout in river:									
i) assess past stocking levels and extent;)								
ii) undertake genetic analysis of native brown trout.) EA		S		S				
2. Restrict introduction of farmed trout into native populations.	EA		R	*	*	*	*	*	*

Note: In addition to the above actions, the EA will address the issue through it's routine and ongoing pollution prevention activities (Refer Section 1.3).

Issue: 31 The inappropriate EC designation to some fisheries reaches.

Fisheries reaches were first designated under the EC Fisheries Directive in the late 1970s. A need for a comprehensive review and revision of these designations within the Midlands Region has been identified. This situation has largely arisen following improvements in water quality in reaches and rivers not currently designated under the EC Directive.

The following reaches should afford designated status:

- River Meden above Warsop, using Warsop Mill for Directive purposes. Proposed status – cyprinid.
- River Meden below its confluence with the River Maun, to its confluence with the River Idle. For Directive purposes the General Quality Assessment (GQA) sampling point will be West Drayton. Proposed status – cyprinid.

- River Poulter above Cuckney has an excellent native brown trout population. Pending a decision on water quality status this reach should be considered for designation status. Salmonid or cyprinid status to be discussed.
- Chesterfield Canal designation to be extended to Kiverton.
- Chesterfield Canal lower reach (downstream of Worksop) to be split into two.

ACTIONS	RESPONSIBILITY		TOTAL COST (£K)	1996/ 97	1997/ 98	1998/ 99	1999/ 2000	2000/ 01	FUTURE
	LEAD	OTHER							
1. Determine whether the following stretches are suitable for designation.									
i) River Idle									
+ a) Meden/Maun confluence to Chainbridge Road (15km).	EA		R	•	•	•	•	•	•
+ b) Chainbridge Road to Idle Stop Pumping Station (23km).	EA		R	•	•	•	•	•	•
+ c) Idle Stop Pumping Station to River Trent confluence (8km).	EA		R	•	•	•	•	•	•
ii) River Meden									
+ a) upper reach.	EA		R	•	•	•	•	•	•
+ b) lower reach from d/s Maun confluence to River Idle.	EA		R	•	•	•	•	•	•
iii) River Ryton									
+ a) Shireoaks to Ranby (11km).	EA		R	•	•	•	•	•	•
+ b) Ranby to River Idle (18km).	EA		R	•	•	•	•	•	•
iv) Chesterfield Canal									
+ a) Worksop to confluence with River Trent (37km).	EA		R	•	•	•	•	•	•
v) Stainforth and Keadby Canal									
+ a) Thorne to confluence with River Trent.	EA		R	•	•	•	•	•	•

Notes: These changes have been proposed to the 1979 designations following the 1994 EC Fisheries Directive Review.

In addition to these proposals, an upgrading to salmonid status may be achieved in the upper reaches of the Rivers Ryton, Poulter and Meden. This would be proposed following relevant studies and appraisals of the fishery and water quality situations.

Issue: 32 The perceived predation and possible need for the control of piscivorous birds in affected fisheries.

The cormorant is commonly perceived to present a serious problem for fisheries within the area. Numbers of these birds have increased substantially in recent years.

Some enclosed waters, such as fish farms and small lakes, are likely to be more susceptible from this form of avian predation, but at present most evidence of damage is anecdotal or circumstantial.

ACTIONS	RESPONSIBILITY		TOTAL COST (£K)	1996/97	1997/98	1998/99	1999/2000	2000/01	FUTURE
	LEAD	OTHER							
1. Await outcome of R & D project.	EA		R	•	•				
2. Determine level of predation in rivers and still waters.	EA		U*			•			
3. Establish methods of control.	EA MAFF	RL RSPB LA	U*				•		

* Costs are undetermined at this stage, until the results of the R & D project are known.

Issue: 33 Impact of letting tidal Trent water into the Warping Drain to sustain levels for abstraction.

It has been the practice in the past to allow water from the tidal Trent to pass back into the Warping Drain at high tide to ensure levels are sufficient for abstraction to continue. There is concern that the influx of saline water from the River Trent may have an adverse impact on the invertebrate population of the drain, as well as quality of water available for abstraction. This may, in turn, have an effect on the fishery which is owned by the Agency.

Although there could be benefits in allowing the Warping Drain to become a more saline ecosystem, because the let back of Trent water is only occasional, both the possibly saline and freshwater ecosystems are affected, to the detriment of each.

ACTIONS	RESPONSIBILITY		TOTAL COST (£K)	1996/97	1997/98	1998/99	1999/2000	2000/01	FUTURE
	LEAD	OTHER							
1. Investigate effects of saline water on invertebrate population water quality and fisheries.	EA		R	•	•	•	•	•	•
2. + Investigate effect of higher water levels on riparian vegetation, wildlife and recreational use.	EA		R	•	•	•	•	•	•
3. + Undertake a WLMP for Warping Drain.	EA		R	•	•	•	•	•	•
5. Determine parameters under which it would be suitable for permitting the transfer of water.	EA		R	•	•	•	•	•	•

Issue: 34 Need to protect the archaeological resource of the area.

New Issue

The Humberhead Levels and River Idle valley are known as very important archaeological resources, but there is also potential for archaeological finds in other river valleys in the area. Organic remains preserved in old river channels and silt deposits are important in understanding past landscapes, ecology and community economics. Peat and alluvial deposits in river valleys and floodplains are at risk of drying out, following flood alleviation schemes, mineral extraction and groundwater pumping.

ACTIONS	RESPONSIBILITY		TOTAL COST (£K)	1996/97	1997/98	1998/99	1999/2000	2000/01	FUTURE
	LEAD	OTHER							
1. Carry out archaeological surveys when undertaking Environmental Appraisals on any Agency scheme.	EA		R	•	•	•	•	•	•
2. Promote national planning guidance and structure/local plan policies to protect archaeological interests.	EA		R	•	•	•	•	•	•
3. Further the understanding of the effect of dessication on archaeological resources.	LA AB		U	•	•	•	•	•	•
4. Survey flood dykes and flood measures of Meden Main to interpret historical use.	EA		S	S					



**Bracebridge
pumping station**

Issue: 35 The limitation of the existing flood flow capacity of the River Torne and the resultant flood risk to adjacent low lying land and the need to balance surface water discharges from new development.

New Issue

The River Torne was improved between Auckley and the River Trent in the late 1980s and early 1990s, but even in its improved condition it can only discharge a 1 in 10 year return period flow with a minimum freeboard of 300mm (estimated at a 1 in 30 year flow bankfull). The feasibility work carried out for this scheme investigated the possibility of higher levels of protection, but further bank raising was not considered to be practical as the flood defences were built on peat and subject to settlement. The alternative of

balancing flows in excess of the carrying capacity was also investigated, but due to the large areas of land required for such works, these works could not be justified. The new flood defences will, however provide land adjacent to the River Torne, with the highest level of protection since the low level land was reclaimed in the 17th Century by the Dutch engineer, Cornelius Vermuyden. The possibility of providing improved use of existing floodplain areas or the construction of new floodplain areas could be investigated further, with possible additional wildlife or recreation benefits.

ACTIONS	RESPONSIBILITY		TOTAL COST (£K)	1996/97	1997/98	1998/99	1999/2000	2000/01	FUTURE
	LEAD	OTHER							
1. Investigate the possibility of providing improved use of existing flood plain areas or the construction of new areas.	EA DMBC	CoCo	U	•					

Future Review and Monitoring

6

The Agency will be jointly responsible, with other identified organisations and individuals, for implementing this Action Plan. Progress will be monitored and reported annually by the Agency to all the key partners and other interested parties. The first Annual Review will be due at the end of January 1998.

The Annual Review will take the form of a short progress report and will:

- examine the need to update the Catchment Management Plan in the light of changes in the catchment;
- compare actual progress with planned progress, and explain the reason for any changes to the content or timing of individual actions;
- report on other matters, including any legislative and classification scheme changes, affecting the Catchment Management Plan;
- roll forward the detailed Activity Plans.

The Agency's overall aim of protecting and enhancing the whole environment contributes to the world wide environmental goal of sustainable development. Holistic planning will be a principal tool in delivering this objective. Forward planning in the Agency will be undertaken for the full spectrum of Agency responsibilities and it will built on the Catchment Management Planning process. The plans will be known as Local Environment Agency Plans (LEAPs) and will include the new functions of Integrated Pollution Control (IPC) and Waste Regulation.

The schedule for achieving LEAP coverage for all the catchments in England and Wales is currently being decided. In the interim, the Agency is committed to preparing Action Plans and Annual Reviews for Catchment Management Plan (CMP) Consultation Reports that were launched before 1 April 1996.



Clumber Lake

future
review



Appendix 1

Notes on river water quality objectives

Two new schemes for the reporting and management of river water quality were introduced in 1994. The two new schemes will replace the National Water Council (NWC) Scheme, which was first introduced in the late 1970s. In May 1994, the Rivers Ecosystem (RE) Use of the Statutory Water Quality Objectives (WQOs) was introduced by the Surface Waters (Rivers Ecosystem) (Classification) Regulations 1994. At the same time, the NRA introduced the General Quality Assessment (GQA) Scheme.

WQOs will be used for long term planning and target setting for the use of the river. The GQA classification will be used to make periodic assessment of overall water quality in order to monitor geographical trends and trends over time.

Until WQOs are formally established by legal notice served by the Secretary of State for the Environment (and therefore exist on a statutory basis), they will be applied on a non-statutory basis through translation of River Quality Objectives (RQOs) from NWC classes to appropriate RE classes with target dates. These new non-statutory RQOs will form the basis from which to develop Statutory WQOs (SWQOs).

Five uses have been proposed for rivers under the WQO scheme, of which the Rivers Ecosystem (RE) use is the first to have been introduced. The five uses include; Rivers Ecosystem (general river health); Special Ecosystem (for example SSSI); Abstraction for Potable Supply; Agricultural/Industrial Abstraction; and Watersports.

Five classes have been established for the RE use:

CLASS	DESCRIPTION
Class RE1:	Water of very good quality (suitable for all fish species).
Class RE2:	Water of good quality (suitable for all fish species).
Class RE3:	Water of fair quality (suitable for high class coarse fish populations).
Class RE4:	Water of fair quality (suitable for coarse fish populations).
Class RE5:	Water of poor quality (which is likely to limit coarse fish populations).
Unclassified:	Water of bad quality (in which fish are unlikely to be present), or insufficient data available by which to classify water quality.

The introduction of SWQOs will require full public consultation, and the timetable will be set by the Government. CMPs will provide the framework within which the Agency can implement the new system, and we will use the Annual Review as well as other approaches to inform you of progress on this matter.

After production of the consultation document the former NRA produced a report entitled 'Colliery Closures in The Midlands' as an initial overview of the potential impact of the recent colliery closures programme. The report recognised the need to gather data over the next few years in order to predict and quantify any environmental impacts and plan remedial measures where necessary.

Table 5 from the Consultation Report is reproduced here with amendments shown in bold.

TABLE 5 – River quality objectives

River	Stretch Description	Reach (KM)	River Quality Objectives		
			Current Quality	Short Term Objective	Long Term Objective
Maun	Sutton Woodhouse to I/L Kingsmill Res	3	RE3	RE3(1995)	RE2
Maun	I/L Kingsmill Res to O/L Kingsmill Res	1	RE5	RE5(1995)	RE5
Maun	O/L Kingsmill Res to Mansfield STP	4.6	RE5	RE5(1995)	RE4
Maun	Mansfield STP to FB. Nr. Warren Fm	1.3	RE5	RE5(1995)	RE4
Maun	FB. Nr. Warren Fm to Edwinstowe STP	9.4	RE5	RE4(1995)	RE4
Maun	Edwinstowe STP to Conf. R. Meden	8	RE4	RE4(1995)	RE3
Maun	Conf. R. Meden to Conf. Bevercotes Beck	6.4	RE3	RE3(1995)	RE3
Maun	Conf. Bevercotes Beck to Markham Moor	3	RE3	RE3(1995)	RE3
Idle	Markham Moor to B6387 Rd Br, Gamston	4	RE3	RE3(1995)	RE3
Idle	B6387 Rd Br, Gamston to Retford	6	RE3	RE3(1995)	RE3
Idle	Retford to Chainbridge Rd	6.5	RE3	RE3(2001)	RE3
Idle	Chainbridge Rd to Mattersey Thorpe STP	10	RE3	RE3(1995)	RE3
Idle	Mattersey Thorpe STP to Idle Pumping St	15.8	RE3	RE3(1995)	RE3
Idle	Idle Pumping St to Conf. R. Trent	8	RE3	RE3(1995)	RE2
Cauldwell Bk	Stonehills Farm Bridge to Conf. R. Maun	2	RE1	RE2(1995)	RE2
Vicar Water	Inlet to Vicar Pond to Conf. R. Maun	2.8	RE5	RE4(1995)	RE4
Rainworth Water	Rail Br, Rainworth to Red Bridge	6	RE4	RE5(1995)	RE4
Rainworth Water	Red Bridge to Conf. Gallow Hole Dyke	3	RE4	RE5(1995)	RE4
Rainworth Water	Conf. Gallow Hole Dyke to Conf. R. Maun	1.9	RE4	RE4(1995)	RE3
Gallow Hole Dyke	Track Bridge to Conf. Rainworth Water	3	RE4	RE3(1995)	RE3
Bevercotes Beck	Wellow to Boughton STP	3.1	RE4	RE4(1995)	RE4
Bevercotes Beck	Boughton STP to A6075 Br, Boughton	0.7	RE5	RE5(1995)	RE5
Bevercotes Beck	A6075 Rd Br, Boughton to Rd Br, Walesby	3.3	RE5	RE5(1995)	RE5
Bevercotes Beck	Minor Rd Br, Walesby to Conf. R. Maun	3	RE5	RE5(1995)	RE4
River Meden	Whiteborough to A617 Br, Pleasley	6	RE2	RE3(1995)	RE3
River Meden	A617 Br, Pleasley to Rail Br, Littlewood	4	RE1	RE2(1995)	RE3
River Meden	Rail Br, Littlewood to Warsop STP	7.7	RE2	RE2(1995)	RE3
River Meden	Warsop STP Outfall to I/L Thoresby Lake	3.8	RE2	RE4(1995)	RE3
River Meden	Inlet to Thoresby Lake to Conf. R. Maun	6.8	RE5	RE5(1995)	RE2
River Meden	Conf. R. Maun to Conf. R. Idle	6.3	RE4	RE4(1995)	RE3
Skegby Bk	Bridge at Huthwaite to Skegby STP	3.5	RE1	RE2(1995)	RE3
Skegby Bk	Skegby STP to Conf. R. Meden	0.7	No Data		RE5
Leas Brook	Mansfield STP to Conf. R. Meden	3.6	RE2	RE2(1995)	RE5
Sookholme Brook	Source at Sookholme Bath to R Meden	2.2	RE3	RE4(1995)	RE4
Shire Brook	Footbridge to Conf. Sookholme Bk	1.5	RE4	RE5(1995)	RE5
R Poulter	FB at Scarcliffe to I/L Langwith Lake	4.5	RE1	RE2(1995)	RE2
R Poulter	I/L Langwith Lake to Langwith STP	1	RE2	RE2(1995)	RE2
R Poulter	Langwith STP to A616 Rd Br, Cuckney	1.5	RE2	RE3(1995)	RE2
R Poulter	A616 Rd Br, Cuckney to I/L Clumber Lake	6.6	RE5	RE5(1995)	RE2
R Poulter	I/L Clumber Lake to Normanton Br	4.4	RE5	RE5(1995)	RE2
R Poulter	Normanton Br to Conf R Idle	6.8	RE4	RE3(1995)	RE2
Millwood Bk	Track Br, Hazelmere Fm to Creswell STP	3.3	RE3	RE4(1995)	RE2
Millwood Bk	Creswell STP to I/L Welbeck Top Lake	4	RE3	RE5(1995)	RE3
Millwood Bk	I/L Welbeck Top Lake to Conf. R. Poulter	3.8	RE5	RE5(1995)	RE3
Whitwell Bk	Rd Br, Whitwell Colliery to Millwood Bk	1.5	RE3	RE5(1995)	RE4
Walling Brook	Broad Ln Br, Hodthorpe to Millwood Bk	1.1	RE4	RE4(1995)	RE2
Ranskill Bk	A638 Rd Br, Barnby Moor to Ranskill	4.4	RE2	RE2(1995)	RE2
Ranskill Bk	Ranskill to Conf. R. Idle	3.7	RE4	RE5(1995)	RE4
Ryton	FB at Peck Mill Bottoms to Anston Bk	3	RE2	RE2(1995)	RE2
Ryton	Anston Bk to Ford, Shireoaks	3	RE2	RE2(1995)	RE2
Ryton	Ford at Shireoaks to Worksop STP	7	RE2	RE3(1995)	RE3
Ryton	Worksop STP to Chequer Br, Ranby	5	RE2	RE4(1995)	RE3
Ryton	Chequer Br, Ranby to Oldcotes Dyke	9	RE2	RE3(1995)	RE2

Ryton	Oldcotes Dyke to Conf. R. Idle	11	RE2	RE3(1995)	RE2
Anston Brook	Rd Br at Hardwick to Conf. Cramfit Bk	3	RE2	RE2(1995)	RE2
Anston Brook	Conf. Cramfit Bk to Church Bridge	2	RE3	RE4(1995)	RE4
Anston Brook	Church Bridge to Conf. R Ryton	3	RE2	RE4(1995)	RE3
Cramfit Bk	Dinnington STP to Conf. Anston Bk	1.6	RE5	RE5(1995)	RE5
Oldcotes Dyke	Conf. Maltby Dyke to A60 Rd Br, Oldcotes	2.8	RE3	RE3(1995)	RE3
Oldcotes Dyke	A60 Rd Br, Oldcotes to Conf. R Ryton	5	RE3	RE3(1995)	RE3
Maltby Dyke	(Hellaby Bk) Railway Br to Maltby STP	4.1	RE3	RE3(1995)	RE2
Maltby Dyke	Maltby STP to Conf. Oldcotes Dyke	1	RE5	RE5(1995)	RE5
Hooton Dyke	Rail Br, Thurcroft to Oldcotes Dyke	3	RE2	RE3(1995)	RE3
Firbeck(Lamb Lane)Dyke	Track Br at Letwell to Oldcotes Dyke	2.9	RE2	RE2(1995)	RE2
Hodsock Bk	Hodsock STW to Conf. Oldcotes Dyke	1.7	RE3	RE4(2001)	RE4
Owlands Wood	Track Br, Woodsetts to Holme House Fm Br	2	RE3	RE5(1995)	RE5
Owlands Wood	Holme House Fm Br to Conf. Hodsock Bk	5.7	No Data	RE4(1995)	RE4
Owlands Wood	Conf. Hodsock Bk to Conf. Oldcotes Dyke	0.8	RE3	RE4(2001)	RE4
Warping Drain	Road Br at Newlands Fm to Conf. R Trent	11.8	RE3	RE4(1995)	RE4
Ferry Drain	Cover Road Jn. to Conf. R Trent	9.5	RE5	RE5(1995)	RE4
River Torne	Styrrup Lane to Conf. Harworth Dyke	2.8	RE2	RE3(1995)	RE3
River Torne	Conf. Harworth Dyke to Little Black Lane	1.1	RE5	RE5(1995)	RE4
River Torne	Little Black Lane to Conf. Wadworth Carr	4.8	RE4	RE4(1995)	RE4
River Torne	Wadworth Carr to Rossington, A638 Br	4.9	RE4	RE4(1995)	RE4
River Torne	Rossington, A638 Br to B1396 Br, Auckley	2.5	RE4	RE4(1995)	RE3
River Torne	B1396 Rd Br, Auckley to Pilfrey Bridge	20.8	RE5	RE5(1995)	RE3
Ruddle (Paper Mill Dyke)	B6427 Br, Braithwell to Conf. R Torne	10.5	RE2	RE3(1995)	RE2
St Catherine's Well STM	Alverley Grange Rd Br to Conf. R Torne	5	RE3	RE4(1995)	RE4
Mother Drain	Balby STp to Potteric Pumping Station	2.9	RE4	RE5(1995)	RE5
Mother Drain	Potteric Pumping Station to Conf. R Torne	4.2	RE4	RE4(1995)	RE4
Three Rivers	Pilfrey Bridge to Keadby Pumping Station	3	RE4	RE4(1995)	RE4
Hatfield Waste Drain	Hatfield Woodhouse STP to Goodcop Fm	5.5	RE5	RE4(2000)	RE4
Hatfield Waste Drain	Goodcop Farm to Pilfrey Bridge	9.5	RE5	RE4(2000)	RE4
Fores Drain	Sandall Beat Wood to Conf. Village Drain	4	RE3	RE4(1995)	RE4
Diggin Dyke	Conf. Village Drain to Waterton P Station	2.5	RE6	RE4(2000)	RE4
Woodhouse Sewer	Waterton Pumping Station to Hatfield STP	3.2	RE6	RE4(2000)	RE4
Paupers Drain	Crowle STP Outfall to Conf. R Trent	20	RE5	RE5(1995)	RE4
Adlingfleet Drain	Sand House Fm to Conf. R Trent	6.5	RE5	RE5(1995)	RE4
Broadbridge Dyke	FB Hartshill to US Kiveton Park STP	1.1	RE4	RE4(1995)	RE2
Broadbridge Dyke	Kiveton Park STP to Chesterfield Canal	1.3	RE3	RE4(1995)	RE4
North Soak Drain	Medge Hall to Conf. South Soak Drain	8.2	RE5	RE5(1995)	RE5
South Soak Drain	Moors Bridge to Conf. Three Rivers	13.5	RE5	RE5(1995)	RE4
N. Level Engine Drain	Woodcarr Pumping Station to Pilfrey Br	5.8	RE5	RE5(1995)	RE5
S. Level Engine Drain	Bull Hassocks P. Station to Pilfrey Bridge	14.3	RE5	RE5(1995)	RE4
Stainforth&KeadbyCan	River Don Navigation to Thorne Lock	7.2	RE3	RE4(1995)	RE4
Stainforth&KeadbyCan	Thorne Lock to River Trent	17.1	RE3	RE3(1995)	RE3
Chesterfield Canal	Conf. Broadbridge Dyke to Pudding Dyke	2.3	RE5	RE5(1995)	RE4
Chesterfield Canal	Pudding Dyke to Turner Wood	1.6	RE2	RE3(1995)	RE3
Chesterfield Canal	Turner Wood to B6045 Rd Br, Bracebridge	6	RE3	RE3(1995)	RE3
Chesterfield Canal	B6045 Bracebridge to Clarborough	17.5	RE5	RE5(1995)	RE3
Chesterfield Canal	Minor Rd Br, Clarborough to River Trent	11.3	RE4	RE4(1995)	RE3

State of the Catchment

Over recent years significant failures of quality objectives for the stretches of river identified in Table 5 have included:

a) River Maun at Mansfield, Whinney Hill and Whitewater

These failures are due to a combination of effects, including overflow of water from Kingsmill Reservoir for which there are planned actions (see Issue 15) and sewer overflow problems which are being addressed under AMP programme commitments in Mansfield and Sutton in Ashfield. In the longer term a further tightening of Mansfield STP consent may be necessary and this aspect is being reviewed (see also Issue 13).

b) River Idle at Misterton

Although the most recent update of data in 1995 indicates that this stretch complies with its quality objective, the compliance is marginal. Failure is thought to result from algal effects in the lower section of the Idle. The causes are being investigated and as an aid to this a continuous automatic river quality monitor has been installed near Misterton (see also Issue 7).

c) River Poulter, Millwood Brook and Rainworth Water

The failures of quality objectives on the lower sections of the above watercourses are due to elevated concentrations of BOD and high pH levels. These result from eutrophication in the on stream lakes. The systems are being monitored for nutrients and will form part of the 1997 review (see Issue 15). Underlying water quality on these watercourses is mostly good in terms of sanitary determinands.

d) Walling Brook

The Walling Brook receives STP effluent in low dilution and there have been quality failures due to low levels of dissolved oxygen which result from sluggish low flow conditions in the brook. The Agency will review what action can be taken in this watercourse (see Issues 12 and 13).

e) Maltby Dyke at Carr Lane

Poor quality here arises from the contribution of urban runoff including storm overflows and surface drainage from an industrial estate.

The natural dilution afforded by the base flow in the upper stretch of the dyke is small (see Issue 18).

f) River Torne at Auckley

Elevated levels of ammoniacal nitrogen occasionally cause this location to fail to comply with the long term quality objective. Although all STPs upstream of this stretch comply with their existing consents it is suspected that sewage effluent is the cause of the problem. Further investigation, including quality modelling, is being undertaken to determine the cause, and actions will be instigated under AMP3, if necessary, to rectify this failure (see Issue 13).

g) Diggin Dyke (Fores Drain) at Holmewood Farm, Woodhouse Sewer and Hatfield Waste Drain at Goodcop Farm

These rivers fail their objectives as a result of inadequate sewage treatment at Armthorpe STP. Severn Trent Water Ltd has agreed to rectify this and the AMP2 programme includes provision for the necessary improvements (see Issue 13).

h) Paupers Drain and Adlingfleet Drain

These failures result from the effects of poor quality land drainage. The causes and possible actions are considered in Issue 19.

i) Chesterfield Canal at Pudding Dyke Bridge

This stretch of the canal has very low flow, is silted and exhibits low dissolved oxygen levels. Improvements are expected following the completion of desilting which is a part of the current canal restoration scheme.

j) Chesterfield Canal at Retford

This failure is thought to result from algal growth effects and is being monitored for nutrients as a part of the on-going programme toward 1997 review (see Issue 15).



Appendix 2

List of organisations and individuals responding to the consultation report

The following organisations and individuals sent in written responses to the Consultation Report. The Agency gratefully acknowledges all comments received.

Anglian Water Services Ltd
Ashfield DC (Technical Services)
Barnby Moor Parish Council
Bawtry Town Council
Bolsover DC (Planning Services)
Boothferry BC
British Horse Society
British Trust for Ornithology
British Waterways
H Brown
Chesterfield Canal Society
Coal Authority (Licensing)
Coal Authority (Property and Environment)
Council for the Protection of Rural England
Country Landowners Association
Countryside Commission (Midlands Region)
JM Creed
Doncaster MBC (Borough Engineers)
Doncaster MBC (Pl. and Design Services)
Doncaster MBC (Rec. and Cultural Services)
English Heritage (East Midlands)
English Nature (East Midlands)
English Nature (South Humberside)
Farming and Wildlife Advisory Group
Govt. Office for Yorks. and Humberside
Greenwood Community Forest
JK Harvey
J Herbert
Haxey Parish Council
Humberside CC (Technical Services)
A Ingham
Inland Waterways Association
Keadby with Althorpe PC
BC Kinder
Mansfield DC (Pl. and Economic Devel)
Mattersey PC
MAFF
NFU (East Midlands)
Newark and Sherwood DC (Devel and Pl)

Nottinghamshire CC (Archaeological Off)
Nottinghamshire CC (Pl and Econ Devel)
Nottinghamshire Wildlife Trust
HC Page
Railtrack
Ramblers Association (Notts)
Ramblers Association (S Yorks & NE Derbys)
Ramblers Association (Doncaster – Vice Chairman)
Ramblers Association (Doncaster – Countryside Officer)
Ramblers Association (Rotherham Metro)
C Rhodes
RJB Mining (UK Ltd)
Rossington Environmental Association
Rotherham MBC (Planning)
RSPB
Rural Development Commission
Rural Development Commission (Yorks and Humberside)
Salmon and Trout Association
Sports Council (East Midlands)
M Straw
Tarmac Quarry Products (Estates and Environment)
Thoresby Estates Management Ltd
U Thorpe
Tickhill and District Footpaths Group
Tickhill Countryside Group
Tickhill Town Council
Trent and Peak Archaeological Trust
Trent District Anglers Association
University of Sheffield (Archaeology and Prehistory)
MH Whitta
J Wright
Yorkshire Wildlife Trust
Yorkshire Wildlife Trust (Potteric Carr Nature Reserve)

Appendix 3

Response to comments received

Key:

(S) – Support (Q) – Query (O) – Opposing (C) – Comment (I) – Information

CONSULTEE	COMMENTS	RESPONSE/ REFERENCE IN SECTION 5
Anglian Water Services Ltd	Issues 5, 9, 10 and 17: (S). Issue 17: (Q) – environmental investigations seem very pertinent. Concerns regarding ingress of contaminated colliery discharge water from the River Idle into the Sherwood Sandstone.	Issues 5,9,10 & 17. Recognise concerns.
Ashfield DC (Technical Services)	No Comment.	-
Barnby Moor PC	Issue 15a: (Q) – any action to improve the state of the reservoir? Problems in the area near Gamston where Poulter, Maun, Meden join to make the River Idle – subsidence from Bevercotes Pit, any action?	Yes – actions being taken on both counts see Issues 15a and 21.
Bawtry Town Council	General concerns: global warming, heritage, improvements.	Issue 28 action 2. Issue 29 action 4.
Bolsover DC (Planning Services)	Issues 13, 17 and 21: (S) – issues adequately addressed.	Issues 13, 17 & 21 See Section 3.2.10.
Boothferry BC	Number and nature of LAs to be amended. Issue 23 : (C) – definition of a floodplain for the River Torne should be afforded a high priority. Issue 24 : (S) – expects to be consulted on the improvements. Issue 25 : (C/S) – recreational/ heritage facility at Bull Hassocks Pumping Station, not referred to?	Noted. Issue 23 – agreed. Issue 24 – noted. Issue 25 – not proceeding.
British Horse Society	Issue 29: (Q/C) – possible increase in bridleways along rivers. .	See issue 29 Action 5.
British Trust for Ornithology	Information offered Issue 24: (C) – restoration/conservation of habitats such as floodplain wetlands. Issue 27 – Biodiversity.	Issue 24 – title amended, 4 new actions added. Issue 27 – expanded.
British Waterways	Fisheries in canals omitted. Issue 14, 15 & 31: (S) – support options outlined.	Overview amended.
H Brown	Issue 28: (S) – importance to be stressed. Issue 29: (S) – a good idea please urge.	Noted.
The Chesterfield Canal Society	Concern re protection of navigation on Chesterfield Canal. Construction of reservoirs/night time irrigation? Could groundwater from Manton Colliery be used to supply the Canal? Increased water requirements can come from increased holding capacity of the long summit pound of the canal subsequent to full-depth dredging.	Noted. Agency has no powers to insist on night time irrigation. No – needed for public water supply and River Ryton. Noted.

The Coal Authority, Licensing Dept.	Information supplied on coal mining operations within the catchment.	Noted.
The Coal Authority, Property and Environment Dept.	Issue 17: (I) – should mention Memorandum of Understanding, both NRA and Coal Authority to work together in dealing with the minewater issue. Issue 21: (I) – remedial works planned for Idle at Gamston involving bank raising and creation of wetlands.	Noted – MoU was later than consultation report date – Action Plan amended.
Council for the Protection of Rural England	Issue 1, 2: (S). Issue 3: (Q) – Thorne Moors raised mire, over abstraction caused lowering of water table beneath a number of wetland sites. Issue 5: (C) – any contribution to the aquifer would be welcome, but would not support aggregate companies pumping in perpetuity. Issue 6: (C) – from an ecohydrology point of view, understanding the environmental needs of the drainage systems is a logical 1st stage. Issues 7, 8, 9: (S). Issue 10: (Q) – idea of remediating contaminated land should be supported, however if not anticipated they could remain undisturbed and finance directed elsewhere. Issues 11, 12, 13, 14, 15, 16 : (S). Issue 19: (C) – cease pumping and undertake hydrogeological investigations to determine the most appropriate restoration strategy. Issue 24: (C/S) – degradation is recognised – important options are adopted if diversity is to be restored. Issue 25: (C/S) – need to balance competing interests. Issue 26: (S). Issue 27: (C/S) – assessment needed of potential for otters to return and remain in the catchment. Long term programme for re-introduction is best option. Issue 30: (S). Issue 32: (S/C) – investigate perceived problem.	Not in this catchment. Noted. WLMP. Appropriate remediation on development – see Issue 10. WLMP. Noted. Noted. Agency can provide habitat only – see Issue 27. See Issue 32.
Country Landowners Association	No comment.	-
Countryside Commission (Midlands Region)	Greenwood Forest Plan to be included. Issue 15a, 29 : (S). Riverside routes such as Meden Trail, Maun Valley Trail are being developed(+ Maun Valley Strategy). CoCo – Countryside Character Programme Reclamation of colliery spoil tips for rec use.	Noted – see section 3.2.10 and Issue 29 action 1,2,3 & 10.
JM Creed	Issue 29: (S/I) – would like a bridleway alongside River Idle.	See Issue 29, action 1.
Doncaster MBC (Borough Engineers)	Issue 29: (S/Q) – welcomes paths alongside rivers but asks whether access will be dedicated to the public or on a permissive basis.	Not known until discussions commence via LA/RA.
Doncaster MBC (Planning & Design Services)	Issue 2: (S/C) – winter storage facilities should be provided. Issue 3: (S/C) – should select strategic floodwater overflow/storage sites adjacent to 'Main Rivers' to create	Issues 2 action 1. Agreed – see Issue 3.

	<p>and replenish bodies of water to help reduce demands on aquifer-produced supplies.</p> <p>Issue 4: (S/C) – research needed to evaluate the effectiveness or desirability of allowing river water to recharge groundwater supplies.</p> <p>Issues 5, 6, 9, 10, 11, 12, 13, 15, 16, 17, 18: (S).</p> <p>Issue 19: (S/C) – further information needed, possibly altering peat cutting practices, and would be possible to recycle drained water within the peat moor system leading to major ecological benefits.</p> <p>Issues 20, 21, 22, 23, 24, 25, 26, 27, 31, 32, 33: (S).</p>	<p>Not a problem near Doncaster.</p> <p>Noted.</p>
Doncaster MBC (Recreational & Cultural Services)	Comments made on Issues 2, 3, 4, 5, 6, 11, 19, 20, 24, 25, 27, 30, 31, 32, & 33 are similar to those made by Mr J Prior at Doncaster MBC (see above). General support on all Issues.	See above.
English Heritage (East Midlands)	<p>Issue 29: (S/Q) – survey of heritage assets of waterside would allow impact of footpath initiatives to be assessed – could be added to the list of targets.</p> <p>Concerns – Humberhead Levels, Dewatering, Creswell Gorge.</p>	<p>See Issue 29 action 4.</p> <p>Noted – see section 3.2.10.</p>
English Nature (East Midlands)	<p>Calcareous flush communities – info to be added.</p> <p>Issue 1: (C) – any change in water source to the Canal must result in a net increase in the water quality of the canal.</p> <p>Issues 2, 3 : (S).</p> <p>Issue 6: (C) – ‘do nothing’ option – a considerable loss of nature conservation due to the damage of the Humberhead Mosses.</p> <p>Issue 8: (C) – Rainworth Lakes (SSSI) also has problems.</p> <p>Issue 13: (S).</p> <p>Issue 15: (C) – targeting of areas must include the nature conservation benefit as a major criteria.</p> <p>Issue 19: (C) – should include the option of impounding water around sensitive sites.</p> <p>Issue 24: (C) – scheme has had major negative impact on nature conservation interest of this once nationally important area.</p>	<p>Noted – see Issue 2 action 2.</p> <p>Do nothing option not carried through to the Action Plan See Issue 15b – being tackled.</p> <p>Noted.</p> <p>Noted.</p> <p>‘Do nothing’ option not in Action Plan.</p>
English Nature (Humberside & Pennines)	No comment (dealt with by East Midlands team).	-
Farming and Wildlife Advisory Group	No comment.	-
Government Office for Yorkshire and Humberside	No comment.	-
Greenwood Community Forest	General support.	-
JK Harvey	Issue 29: (S/C) – could circular routes be devised and help redress the balance after paths were lost to the A1?	See Issue 29 action 1.

Haxeby Parish Council	Concerns – Parking facilities, overuse of Pumping Stations, and decreased winter water levels.	Issue 29, action 12. Issues 2,3,5 & 6.
J Herbert	No comment.	-
Humberside CC (Technical Services)	Concerns – no reference to Archaeological sites in the area. Balance needed to be maintained between demands of industry and need to maintain wetland environment for wildlife.	Noted – see new Issue 34. Noted.
A Ingham	Issue 2: (I) – agricultural usage, irrigation, storage reservoirs, winter storage in canals. Issue 15: (Q) – should not borrow money to finance schemes.	Noted. Noted.
Inland Waterways Association	Stainforth & Keadby Canal, Chesterfield Canal. Issue 1: (S/C) – lack of control of irrigation, night time irrigation, winter abstraction to a storage reservoir. Issue 14 : (C) – to include Chesterfield Canal. Issues 2 & 4 :(S). Issue 7 :(Q) – would an increase in baseline retention level at West Stockwith increase winter recharge of the aquifer?	Amendments to text noted. Discussion points noted.
Keadby with Althorpe Parish Council	Issue 29: (S).	Noted – see action 1.
BC Kinder	General support. Concern – Toxic waste dumping at Brampton/Dinnington area.	Noted.
Mansfield DC (Planning & Economic Development)	Issue 2, 12 & 15: (S). Issue 17: (Q) – whilst pumping at disused collieries, what guarantee is there that this will continue? Measures should be considered to prevent uncontrolled re-emergence of mine water on cessation of pumping. Issue 23: (C) – urge production of up to date floodplain boundaries. Issue 29: (C/S) – DC seeks to improve and provide further river walkways, and welcomes developments to improve facilities and access to these rivers.	See note on P.33. Noted. Noted – see action 1.
Mattersey Parish Council	No comment.	
MAFF	Issue 1: (Q) – concern of the effect that the Agency resisting increases in abstraction to balance water demands may have on existing licensed agricultural abstractors. Issue 2: (Q) – what effect on existing licence holders? Issue 5: (C) – possible to construct a water retaining barrier. Issue 6: See comments under Issue 19. Issue 7: (C) – important that agricultural interests are not adversely affected in the event of the other losses not being identified.	Noted – existing licence holders have statutory protection (Water Resources Act 1991). See note above. Only practicable where aquifer is thin. See action 1.

	<p>Issue 8: (C) – an ALF scheme may satisfy the demands for surface water abstraction.</p> <p>Issue 9: (C) – proposed NVZs have still to be designated.</p> <p>Issue 11 & 14 : (S).</p> <p>Issue 19: (Q) – in planning terms peat cutting is classed as a mineral extraction and MAFF is not aware of any of the stated effects resulting from agricultural production. Wording is misleading and should more fully identify the source of the problem. May be scope to relate both Issues 6 & 19 and retaining the winter discharge from the peat cutting area in reservoirs for supplying summer abstraction needs in the low level system.</p> <p>Issue 20: (C) – potential pollution can be minimised where farmers adopt good practice.</p> <p>Issue 23: (C) – redevelopment of existing sites on floodplains should allow all interested parties to have an input.</p> <p>Issue 33: (C) – letting in water for summer use may not be sustainable if this results in a build up of solinity and a resultant breakdown in soil structure.</p>	<p>ALF schemes are designed to protect/restore damaged water based ecology.</p> <p>Noted.</p> <p>Issue 19 rewritten.</p> <p>Agreed.</p> <p>Noted.</p> <p>Noted – see action 1.</p>
NFU (East Midlands)	<p>Issue 2: (S).</p> <p>Issue 8: (O) – would oppose reductions in abstraction if they apply to agricultural abstractors.</p> <p>Issue 9: (Q) – do not believe that the figure of 50mgs of nitrate per litre of water has proved harmful to health and therefore feel that the Agency should not go beyond the statutory duties placed on it under the Nitrates Directive, unless that would be to encourage more sampling for waters in NVZ areas which are borderline cases for inclusion as NVZs.</p> <p>Issue 22: (I) – may be able to help locally in the dissemination of information in a flood warning scheme.</p> <p>Issue 24: (C) – options must not lead to the flooding of agricultural land where it could reasonably be prevented.</p> <p>Issue 25: (O) – against Option 1 unless there was proper compensation to landowners and occupiers for the inundation of agricultural land.</p>	<p>Noted.</p> <p>50 mg/l limit is imposed – we have no control.</p> <p>Noted.</p> <p>Noted.</p> <p>Noted – see WLMP.</p>
Newark and Sherwood DC	<p>Issue 2: (S/C) – supports Options 1 and 2, concerned about Option 3 as it cannot be regarded as a long term solution and must therefore be unsustainable.</p> <p>Issue 3, 4, 5, 8, 9, 10, 13, 16, 17, 20, 21, 22, 23: (S).</p> <p>Issues 26, 27, 28, 29, 30 and 31: (S) – options strongly supported.</p>	<p>Noted.</p>
Nottinghamshire CC (Archaeological Officer)	<p>Issue 25: (Q) – concern over lack of archaeological content. The use and conservation of sites is a major issue.</p>	<p>See new Issue 34.</p>
Nottinghamshire CC (Planning & Economic Development)	<p>General support, especially Issues 2, 3, 16 and 17.</p> <p>Issue 10: (C) – LAs are involved in the remediation process as owners/agents undertaking reclamation works at certain colliery sites.</p>	<p>Noted.</p>



	Issue 11: (C) – WRA has limited responsibility for such operations which are normally exempt from licensing. Would be prepared to advise Agency.	Noted.
	Issue 16: (S/C) – Option 3 – there may be some need for LPA involvement in relation to future local plan allocations. Also comment under Issue 17.	Noted.
	Issue 17: (S/C) – because of Govt commitments, the Coal Authority has taken some responsibility for Option 3. May be merit in referring to likely effects on minewater regime of closures/cessation of pumping outside CMP area.	See note on P.33.
	Issue 29: (C) – hoped that more options can be investigated for extending recreational choices in the Idle catchment.	See Issue 29, action 1.
Nottinghamshire Wildlife Trust	Concern re 'decrease' in anticipated water quality, from present to long term. Issue 1: (C) – scientific interest of the Chesterfield Canal SSSI is linked to the presence of brackish water plant communities. Issue 12: (Q) – RQOs in Table 5 appear to be scheduled to deteriorate and would once again express concern over this apparent deliberate decrease in water quality. Issue 14: (Q) – good quality water from the Manton Colliery shaft used to increase water levels in Canal? Issue 21: (C) – reference should be made to the high wildlife value of some subsidence 'flashes'. Issue 24: (C) -applies to the whole catchment and affects all groups of plant and animal species. Issues 25 & 27: (S) – general support. Issue 29 : (S) – general support where appropriate but some areas where the ecological interest makes increased public access inappropriate. Issue 30: (S).	See Appendix 1. Noted. See Appendix 1. No – needed for PWS and River Ryton. Noted – see Issue 21. Noted – see issue 27. Noted – see action 7.
HC Page	Concern – steady but serious deterioration in the quality of the fishing.	Noted.
Railtrack	No comment.	-
Ramblers Association (Notts)	Issue 29: (C/S) – welcome the possibility of a River Idle walk and more access linked with existing paths.	Noted – see Issue 29, action 1.
The Ramblers Association (South Yorks & NE Derbys)	Issues 28 & 29: (S).	Noted.
The Ramblers Association (Doncaster – Vice Chairman)	Issue 29: (C) – improvements to Rights of Way could be made of substantial benefit to all users. Tree planting to create a more naturalised habitat for wildlife.	Noted – see Issue 24, action 1.
Ramblers Association (Doncaster – Countryside Officer)	Issue 28: (C/S) – much wider concern and ask for inclusion of at least a 'pilot' waterway improvement scheme, based on a mining community regeneration and aimed at encouraging local involvement. Issue 29: (C/S) – ask for a more positive and wider ranging commitment to walking, and improve public access.	Noted – EA can 'promote only' – see action 2. Noted – see Issue 29, action 1.

Ramblers Association (Rotherham Metro District)	Issue 29: (S/C) – supports any initiative to create additional public access into the countryside. Like to see further initiatives directed towards access and link with present paths.	See Issue 29, action 1.
C Rhodes	Issues 16, 17, 18 & 29: (S).	Noted.
RJB Mining (UK) Ltd	Issue 17: (C) – include reference to Memo of Understanding between NRA and RJB. Issue 21: (C) – have in-house expertise and examine every mining proposal for potential surface damage including to watercourses, sewage works etc.	Con report prior to MoU. See para 4 P.11. Noted.
Rossington Environmental Association	Issue 29: (S/C) – Tree planting schemes should be undertaken, footbridge over the River Torne to increase access. Specific request to generate a scrape on Rossington Carr.	See Issue 29 action 1.
Rotherham MBC (Planning)	Issue 1: (C) – general comments on the conservation of flora and fauna on the Chesterfield Canal.	Noted.
RSPB	See comments by English Nature (East Midlands Team) joint response.	Noted.
Rural Development Commission	No comments.	
Rural Development Commission (Yorks and Humberside)	No comments.	
Sherwood Initiative	No comments.	
Sports Council (East Midlands)	Concerns – lack of sport recreation, protection of enclosed waters.	Noted.
M Straw	Issue 15: (Q/C) – King's Mill Reservoir – general comments on water quality.	Noted.
Tarmac Quarry Products (Estates and Environment)	No comment.	
Thoresby Estates Management Ltd	Issue 8: (S) – have noticed low flows at the Rainworth Water as it passes through Carr Brecks Farm. Issue 10: (C) – do not know of run off from contaminated land into the River Meden. Issue 20: (C) – not noted nearer the Boughton and the Budby boreholes, both suffer from groundwater problem and are within the NSA. Issue 21: (C) – constant hazard and refer to a larger area than identified. Issue 30: (S).	Noted. Agreed/note. Examples only given in text. Noted.
U Thorpe	Issue 29: (S) – would like to see upgrade to Bridleways.	Action 1.
Tickhill Countryside Group	Issue 10: (S) – support Option 1. Issue 12 – 13: (Q/O) – surprised at the high quality of water reported as there is a persistent and often substantial discolouration/smell. Do not accept the low long-term objective of RE4.	Noted. Noted.

	<p>Issues 16 & 23 : (S).</p> <p>Issue 24: (S/O) – strongly support Options 1, 2, 3 and 5 and regard 4 as unacceptable.</p> <p>Issue 27 & 28 : (S).</p> <p>Issue 29: (S/C) – like a riverside walk from Rossington to Tickhill.</p> <p>Concerns – Tree planting, remedial action, Agency co-ordination with IDBs.</p>	<p>Noted.</p> <p>Noted.</p> <p>Noted.</p>
Tickhill and District Footpaths Group	<p>Issue 24: (S).</p> <p>Issue 29: (S/C) – encouraged to put forward ideas by the positive attitude and meeting with Valerie Holt. Emphasise willingness to help, query re: Agency land ownership.</p>	Noted.
Tickhill Town Council	General support.	Noted.
Trent & Peak Archaeological Trust	<p>Concern – lack of consideration of archaeological issues.</p> <p>Issue 29: (S) – welcomes its inclusion.</p>	See new Issue 34.
Trent District Anglers Association	<p>Issues 1, 5, 7, 8, 9 & 22: (S).</p> <p>Issue 26: (C) – too expensive to deal with.</p> <p>Issues 27 & 30: (S).</p>	Noted – see action 2.
University of Sheffield (Archaeology & Prehistory)	<p>General comments.</p> <p>Concern – loss of Holocene record within peatland areas due to peat cutting and drainage.</p>	Noted.
MH Whitta	Suggestion of weirs for the River Torne.	
J Wright	Issue 29: (S) – good idea to create a bridleway along the River Idle.	Action 1.
Yorkshire Wildlife Trust (Potteric Carr Nature Reserve)	<p>Issue 13: (C) – concern of the deterioration in water quality between Balby STP and the Potteric (Balby) Carr Pumping Station.</p> <p>Issue 14: (C) – improve the water quality of the Mother Drain.</p> <p>Issue 18: (C) – work together on issues of water quality etc.</p>	Noted.
Yorkshire Wildlife Trust	<p>Issue 2, 3, 5 & 12: (S/C)</p> <p>Issue 19: (C) – add 'habitats and wildlife' to the issue title.</p> <p>Issues 24 & 25: (S).</p> <p>Issue 27: (C) – conservation should be on a whole catchment level and the CMP should include a commitment to the production of an otter strategy or action plan.</p>	<p>Noted.</p> <p>Noted.</p>

Appendix 4

Amendments to the consultation report

SECTION (as numbered in the Consultation Report)	PAGE No.	ERROR	RAISED BY
Summary Document	5	Thoresby Lake on wrong river.	Mr J Herbert.
2.1.8	17	Fisheries on canals omitted.	British Waterways.
2.1.9	17	Only parts of Sherwood Forest are designated as SSSI.	Notts CC.
2.1.9	18	Stainforth and Keadby Canal connects to Sheffield and South Yorkshire and the Aire and Calder Navigation, not the River Ouse.	Inland Waterways Association.
2.1.9	18	Navigable limit of Chesterfield Canal is Worksop, not Retford.	Inland Waterways Association.
2.1.10	18	LAs to be revised Boothferry BC.	
2.1.10	18	Rail Transport..... (passenger services have already been re-established to Mansfield Woodhouse).	Notts CC.
2.3	23	Key Details:- Delete Humberside County Council. Delete Boothferry Borough Council and replace in alpha order with North Lincolnshire Council.	EA.
2.3	24	Main Towns:- Add Tickhill 5,527. Ollerton / Boughton 9,505.	EA.
3.2 Issue 17	38	Map 14 should read Map 13.	RJB Mining (UK) Ltd.
4.1 Housing	66	Notts Structure Plan now 16,600. Dwellings will be in catchment. 22,500 should read 24,950. Rotherham VDP 11,370. Now 12,303.	Rotherham MBC.
4.1 Transport/ Infrastructure	67	Delete Edwinstowe. Robin Hood Line, passenger services have already been re-established to Mansfield Woodhouse.	EA.
4.4 Map 13	84	Markham Main and Hatfield Collieries omitted.	Rotherham MBC.

Appendix 5

Local planning authorities and development plans

Amendments from Table 1 in the Consultation Report are shown in bold.

Local Planning Authority	Percentage of Council in Catchment Area	Population Estimated in Catchment	Development Plans Title	Status and Consultation Date
Nottinghamshire County Council	40	277,516	Nottinghamshire Structure Plan (Review) Nottinghamshire Minerals Local Plan	Deposit Draft (Apr 94) Examination in Public (Jan 95) Deposit Draft (Sept 93) Public Inquiry (Oct 94)
Ashfield District Council	23	50,080	Ashfield Local Plan	Adopted (Dec 95)
Bassetlaw District Council	68	95,704	Bassetlaw Local Plan	Consultation Draft (Dec 93) Deposit Draft (Apr 95)
Gedling Borough Council	2	<100	Gedling Borough Local Plan	Adopted Nov 90 Review for Public Consultation due
Mansfield District Council	100	102,100	Mansfield Local Plan	Deposit Draft (Sept 95) Public Inquiry (Aug 96)
Newark and Sherwood District Council	20	29,632	Newark and Sherwood Local Plan	Deposit Draft (Feb 95) Public Inquiry (Jun 96)
Derbyshire County Council	6	39,330	Derbyshire Structure Plan (Review) Derbyshire Minerals Local Plan	Consultation Draft (Mar 96) Deposit Draft (Feb 96)
Bolsover District Council	54	39,330	Bolsover Local Plan	Consultation Draft (Feb 96)
Humberside County Council*	6	15,189	Humberside Structure Plan Replacement	Consultation Draft (Jan 94) New Unitary Authority to progress
Boothferry Borough Council*	24	15,189	Boothferry Borough Local Plan	Deposit Draft (Jun 94) Public Inquiry (July 96)
Doncaster Metropolitan Borough Council	48	234,535	Doncaster Unitary Development Plan	Deposit Draft (Jun 94) Public Inquiry (Jun 95)
Rotherham Metropolitan Borough Council	41	58,440	Rotherham Unitary Development Plan	Deposit Draft (Jun 95) Public Inquiry (Oct 96)

* North Lincolnshire Council to progress.

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Rio House, Waterside Drive, Aztec West, Almondsbury, Bristol BS12 4UD
Tel: 01454 624 400 Fax: 01454 624 409

MIDLANDS INFORMATION ENQUIRIES

REGIONAL OFFICE

Sapphire East
550 Streetsbrook Road
Solihull
West Midlands B91 1QT
Tel: 0121 711 2324
Fax: 0121 711 5824

UPPER TRENT AREA

Sentinel House
Wellington Crescent
Fradley Park
Lichfield WS13 8RR
Tel: 01543 444 141
Fax: 01543 444 161

UPPER SEVERN AREA

Hafren House
Welshpool Road
Shelton
Shrewsbury SY3 8BB
Tel: 01743 272 828
Fax: 01743 272 138

LOWER TRENT AREA

Trentside Offices
Scarrington Road
West Bridgford
Nottingham NG2 5FA
Tel: 0115 945 5722
Fax: 0115 981 7743

LOWER SEVERN AREA

Riversmeet House
Newtown Industrial Estate
Northway Lane
Tewkesbury GL20 8JG
Tel: 01684 850 951
Fax: 01684 293 599



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