



environment agency plan

IDLE AND TORNE

ACTION PLAN

OCTOBER 2000



ENVIRONMENT AGENCY

Key Details

General:

Area	1307km²
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Population:

Towns	Population
Bawtry	2,628
Crowle	3,699
Dinnington	7,970
Doncaster (part)	15,000
East Retford	21,070
Epworth	3,359
Hatfield	15,421
Maltby	12,320
Mansfield	89,065
Ollerton	6,745
Rossington	12,472
Shirebrook	9,220
Sutton-in-Ashfield	40,455
Thorne*	16,855
Tickhill	1,830
Warsop	13,035
Worksop	39,120

Conservation

SSSIs	48
Scheduled ancient monuments	48
Sites of importance to nature conservation	409
National nature reserve	1
Local nature reserves	7
Candidate special area of conservation	1
Prop. special protection area	1

Fisheries

Length of designated fisheries (km):	
Salmonid	0
Cyprinid (course fish)	114

Flood Defence

Length of 'main' river (km)	312.8
Flood alleviation schemes	3
Agency pumping stations	17
IDB pumping stations	26

Consented Discharges

Sewage Treatment works	57
Storm tank overflows	40
Storm sewage overflows	106
Private sewage treatment plants	45
Trade effluent/site drainage	93

Waste Management

Landfill sites	156
Transfer stations	31
Licensed scrap yards	9
Incinerators	3

Monitored Water Quality

Length of river in GQA grade (km)

Quality	Grade	Length	%
GOOD	A	22	4
	B	71	13
FAIR	C	257	49
	D	63	12
POOR	E	102	19
BAD	F	15	3
Total		530	100

Process Industry Regulation (PIR)

Major industrial processes (Part A)	13
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Radioactive Substances

Authorisations/registrations¹	2
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¹Authorisations: for accumulation and disposal of radioactive waste;
Registrations: to hold radioactive materials.

Vision for the Idle & Torne area

The Environment Agency's vision is 'a better environment in England and Wales for present and future generations'. We aim to protect and improve the environment in an integrated way, to work towards achieving sustainable development. This means managing today's environment without compromising tomorrow's resources.

Our vision for the Idle & Torne LEAP area is:

'Working with others to create a sustainable environment that improves the quality of people's lives.'

Many of the issues raised in this document reflect the demand for the natural resources available in the area, including groundwater, coal, peat, sand and gravel. The economic and social benefits of exploitation of these resources must be balanced against the impact that these activities have on the environment.

Key objectives for the area include:

- Supporting biodiversity through the protection and enhancement of species and habitats
- Maintaining and improving the quality and quantity of the water resources of the area
- Ensuring that the collieries in the area do not have a detrimental effect on the environment
- Protecting the conservation potential of the area from the effects of air pollution, wetland destruction, water pollution and over-abstraction
- Providing for the agricultural needs of land users in the area without adversely affecting the environment
- Reducing the problem of flytipping

We can best achieve this by:

- **Partnerships.** By collective action through partnerships with industry, local authorities, environmental groups and educational establishments we can manage the environment from a wider perspective
- **Enforcement.** Our wide-ranging powers mean that we can regulate the activities of those who impact on the environment, through pollution prevention, education and enforcement
- **Consultation.** By seeking the views of members of the public, conservation bodies, businesses, we can ensure that we take your views into account

By applying these principles, the Agency can manage the environment in an integrated and sustainable way, to improve the quality of people's lives, ensuring that our vision becomes a reality.

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1. Introduction

This action plan is the second stage in the Local Environment Agency Plan (LEAP) process for the Idle & Tame catchment. The plan sets out a programme of work to be undertaken by the Agency and other partner organisations over the next five years. It looks at education, planning policy, working partnerships and the role each plays within the area as a means of addressing wider, long-term issues. Progress against the plan will be monitored and reported annually.

The Idle & Tame LEAP area covers about 300 square kilometres, including part of the counties of Nottinghamshire, Derbyshire, South Yorkshire and North Lincolnshire. Major settlements in the plan area include Sutton-in-Ashfield, Mansfield, Worksop, East Retford, Crowle, Hatfield and parts of the suburbs of Doncaster and Rotherham.

The Agency uses water catchment boundaries for LEAPs because they represent firm environmental boundaries. The map inside the cover shows some of the features that make up the catchment.

1.1 The Environment Agency

The Environment Agency is a national government agency, a public body, formed on 1st April 1996. It inherited the many responsibilities from the National Rivers Authority, Her Majesty's Inspectorate of Pollution, the Waste Regulation Authorities and some technical units from the

Department of the Environment (now part of the Department of the Environment, Transport and the Regions, DETR).

The Agency covers England and Wales (with separate organisations for Scotland and Northern Ireland), which is divided into eight regions and twenty-six areas. The Idle & Tame is one of four LEAP catchments in the Lower Trent Area of the Midlands Region. Most of the Agency's work is undertaken at Area level and this allows for an efficient and appropriate response to the delivery of its services.

The principal aim of the Environment Agency is to protect and enhance the environment, thus contributing to the Government's overall commitment to sustainable development. We do this by integrating environmental protection for land, air and water. Pollution prevention and control, education and enforcement, where necessary, will be the key means of achieving this aim.

Most of the Agency's work operates at a local level and this allows an integrated approach to managing the environment. LEAPs translate the Agency's 'Environmental Strategy' into practical action. The strategy is based on the need to take an integrated approach to the management of the whole environment and identifies nine environmental themes that are of principal and immediate concern to the Agency.

The strategic nature of the LEAP as a planning tool means that the plan is not

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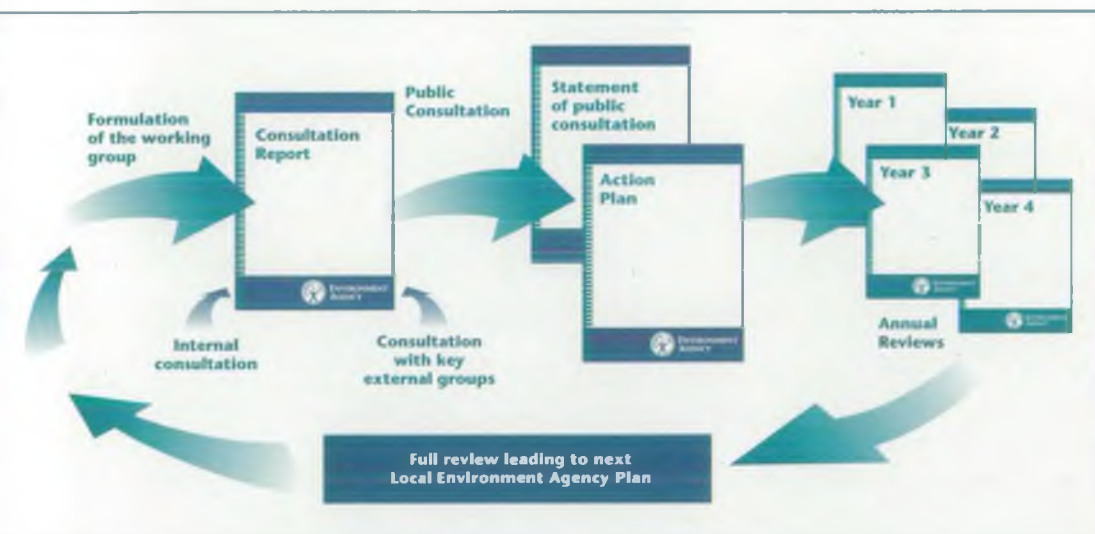


Figure 1 The LEAP process and the main outputs in the five year cycle

designed to reflect fully our routine activities. Our everyday work commits substantial resources to managing the environment, including extensive monitoring and survey operations. Our work and responsibilities do not cover all aspects of environmental legislation or services to the general public. There are other statutory and non-statutory bodies who have responsibilities such as local authorities and British Waterways.

1.2 The Local Environment Agency Plan Process

LEAPs are non-statutory integrated action plans based on river catchments. They take a holistic approach to the management of the environment and provide a focus for those who have concerns with the future of their local environment. In the Lower Trent Area four LEAPs have been produced see table 1.

1.2.1 LEAPs and other plans

The Agency shares the regulation and management of the environment with others. Whilst LEAPs are the Agency's plans, their content and development will reflect these shared responsibilities. LEAPs will complement and integrate with other organisations' plans e.g. Local Development Plans, Local Waste Plans, Local Air Quality Management Plans, Local Biodiversity Plans and Local Agenda 21 Action Plans.

The Agency hopes that public participation in LEAPs will increase local awareness of environmental issues, involve people in their environment and create a feeling of ownership of our environment.

1.2.2 Agency statutory committees

In order to ensure openness, objectivity and accountability, the Agency is required by law to consult committees on all aspects of its work. Three committees serve the Midlands Region:

- Regional Environmental Protection Advisory Committee (REPAC)

- Regional Flood Defence Committee (RFDC)
- Regional Fisheries, Ecology & Recreation Advisory Committee (RFERAC)

Membership of the regional committees consists of local people drawn from public life including industry, agriculture, local authorities and environment groups. REPAC and RFERAC are advisory committees, while RFDC has executive powers relating to capital expenditure for flood defences.

1.2.3 Area environment groups

An advisory Area Environment Group (AEG) serves the Lower Trent Area. Membership consists of local people who live or work in the area and who represent a wide range of interests. These include local authorities, industry, agriculture, conservation, amenity and recreational interests and riparian owners. The group advises the Agency on LEAPs and the delivery of local services and acts as a link between the local community, the Agency and its statutory committees.

1.3 Sustainable development, biodiversity and global climate change

1.3.1 Sustainable development

The Environment Agency is required and guided by the Government to use its duties and powers in order to help achieve the objective of sustainable development. The most commonly used working definition of sustainable development was established by the Brundtland Commission report 'Our Common Future' (1987):

"... development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

Meeting the principles of sustainable development does not mean less economic development, but recognises the importance of integrating human needs with that of the environment in which we all live. One of the challenges is to promote ways of encouraging environmentally friendly economic activity, and of

CATCHMENT	START	CONSULTATION STARTS	ISSUE ACTION PLAN	1ST ANNUAL REVIEW
Soar	October 1996	April 1997	June 1998	July 1999
Derbyshire Derwent	April 1997	February 1998	February 1999	April 2000
Lower Trent & Erewash	March 1998	February 1999	February 2000	March 2001
Idle & Torne	March 1999	November 1999	October 2000	October 2001

Table 1 The Lower Trent area Local Environment Agency Plan programme

discouraging or controlling activity that could damage the environment. The creation of the Environment Agency was, in part, recognition of the need to take a more integrated and long-term view of environmental management at a national level. LEAPs are an important part of this process focusing at the local level.

1.3.2 Biodiversity

Biodiversity is commonly used to describe the huge variety of living organisms. The Biodiversity Convention, signed by the Government at the Rio 'Earth Summit' in 1992, seeks to ensure that the full range of animal and plant species is conserved. A national action plan for biodiversity was subsequently published in January 1994.

In pursuance of the Government's commitment to biodiversity conservation, the Agency has significant responsibilities regarding implementation of the Biodiversity Action Plan and will be developing targets for species and habitats of conservation concern. In the Idle & Torne catchment, species including the Otter, Water Vole, Crayfish and the spread of invasive plants are of great concern. In addition there are other water-related species and habitats that will require protection and enhancement, and the Agency is committed to protecting the environment on which these species depend.



Otter

1.3.3 Global climate change

The Earth's climate has always been changing, modelling climate change is difficult and whilst predictions vary, it is generally accepted that global temperatures are rising due to the impact of human activity. The Agency is working to address the likely causes of climate change and its resulting impacts. We aim to achieve the following objectives:

- Help to ensure that the Government's greenhouse gas targets are met
- Develop methods to improve our estimates of the emission of methane into the atmosphere from landfill sites

- Promote tax incentives to reduce energy production from burning fossil fuels
- Set an example by reducing our own energy and fossil fuel consumption
- Invest in research to predict the likely effects of climate change on the environment of England and Wales, and how to manage them
- Provide improved mapping of low-lying coastal areas at risk from sea-level changes
- Develop techniques to identify changes in plant life, using remote sensing methods to measure the effects of different weather patterns in sensitive areas
- Contribute our knowledge and expertise to national forums dealing with climate change

A report called '*The potential impacts of Climate Change in the East Midlands*' has recently been launched by the East Midlands Sustainable Development Round Table (emsdOt) and raises issues that need to be addressed, such as:

- Managing the extremes of flood and drought
- Considering lifestyle changes
- Managing energy consumption
- Assessing business opportunities

2. The Idle & Torne plan area

2.1 Introduction

The Idle & Torne LEAP area covers around 1300 square kilometres, including part of the counties of Nottinghamshire, Derbyshire, South Yorkshire and North Lincolnshire. Major settlements in the plan area include Sutton-in-Ashfield, Mansfield, Worksop, East Retford, Crowle, Hatfield and parts of the suburbs of Doncaster and Rotherham. The population of the plan area is approximately 445,000 people.

In terms of transport links, the area is well served by the road network. The M1 runs close to the western edge of the area, with the A614, the A1(M), and the M18 running north/south, and the M180 running east/west. Railways serving the area include the east coast main line which links East Retford with Doncaster, the Sheffield-Worksop-East Retford line and the reinstated Robin Hood Line which links Nottingham and Worksop via Mansfield.

The local economy has changed significantly over the last two decades with the decline of the coal industry, which was once the area's largest employer. Economic restructuring has affected many manufacturing industries with large declines in employment in textiles and engineering. Despite agriculture being the dominant land use in the area, employment in the agricultural industry has declined, and in line with national trends, there has been a shift from full time to part time farmers. However, these declines have in part been counterbalanced by increases in service industries, and many former colliery sites are now the focus of regeneration schemes, which aim to improve the depressed economy of the former coal mining communities.

The Idle & Torne area has a wide variety of land uses, from heavy industry to intensive

agriculture. Agriculture is the dominant land use especially arable cropping, with the main type of agriculture being cereal production. There are 13 major industrial processes in the plan area including Whitwell Quarry near Worksop.

2.2 Land

2.2.1 Local Administration

Local administration is shared between the Councils listed in the table below.

2.2.2 Landscape

The landscape of the LEAP area varies widely from the flat land of the Isle of Axholme and Hatfield Chase in the north, to the wooded Dukeries and heavily urbanised headwater areas around Mansfield and Doncaster. The landscape has been shaped over many hundreds of years by the cumulative effects of human occupation and industry.

A comprehensive system of pumped drainage helps to support the high-grade agricultural land in the plan area. Although large land areas were converted for agricultural use, woodland is still a major feature of the Idle & Torne area. Remnants of the old Royal Forest of Sherwood survive, much of which is now part of large private estates, such as The Dukeries which is comprised of the former farm estates Welbeck Abbey, Thoresby Hall and Clumber Park. In addition, the LEAP area has been extensively mined for coal in the past and even though the coal industry has experienced a decline there are still some working collieries remaining.

The Rivers Idle & Torne rise between Nottingham and Doncaster and flow generally in a north – easterly direction to

COUNTY OR UNITARY COUNCILS	METROPOLITAN BOROUGH COUNCILS	DISTRICT/BOROUGH COUNCILS
Derbyshire County Council	Doncaster Metropolitan Borough Council	Ashfield District Council
North Lincolnshire Council	Rotherham Metropolitan Borough Council	Bassetlaw District Council
Nottinghamshire County Council		Bolsover District Council
		Gedling Borough Council
		Mansfield District Council
		Newark and Sherwood District Council

Local administration in the plan area

join the River Trent at large land drainage pumping stations at West Stockwith and Keadby respectively. The 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 is also prevalent in the plan area and flows into the River Trent at Owston Ferry. Most of the land in the lower reaches of the plan area lies below the high tide level and is protected by an extensive system of floodbanks.



River Torne

The Rivers Idle & Torne flow through a mixture of open rural and dense urban areas. The River Torne flows mainly through flat agricultural land with the headwaters situated in Sandbeck Hall Lake. It passes the settlements of Tickhill, Rossington, Auckley, Wroot and Sandtoft. The river flows past the southern fringe of Hatfield Moors where peat extraction is taking place. Downstream of Auckley the river has been substantially modified with floodbanks dominating the river and sparse tree cover.

The Rivers Meden, Maun and Poulter feed the River Idle, converging near Gamston. The River Ryton joins upstream of Bawtry. These watercourses flow through Mansfield, Worksop, Warsop and Ollerton. Downstream of Gamston the river flows through East Retford and has been highly modified for flood relief purposes and is embanked in some areas. This area is intensively farmed and has sparse tree cover. Some planting has been carried out on the riverbanks downstream of Idle Stop including low shrub cover for otters. West Stockwith pumping station dominates the landscape near its confluence with the River Trent.

The Countryside Agency has adopted the Countryside Character initiative, which identifies character areas that provide the starting point for promoting local distinctiveness and encouraging local communities to take pride in their own environment, concepts which are an integral part of the sustainable local environment.

Each area has been analysed according to its distinctive character, and broad management opportunities have been suggested to help conserve, enhance, restore or even change the character of the countryside. The Agency considers landscape character within all relevant aspects of its work.

Character Areas in the LEAP area include:

- Sherwood, described as a well wooded, and in places, industrialised region characterised by semi-natural woodlands and heaths, historic country estates, large pine plantations, mining settlements and a planned layout of roads and fields
- Idle Lowlands, described as a varied, low-lying region characterised by sparsely settled carlands, levels, and rolling sandlands with village settlements

2.2.3 Geology

To the west of the LEAP area, the Lower Magnesian Limestone overlies small areas of Coal Measures. These form a broad band along the western edge of the area that is separated from the overlying strata by the Middle Permian Marl, which gradually becomes sparser in the south. To the south of Worksop, the Middle Permian Marl is overlain directly by Sherwood Sandstones. This is intervened in the north by Upper Magnesian Limestone and Upper Permian Marl.

The outcrop of the Sherwood Sandstone underlies the majority of the area and continues out to the east, where it is overlain by the Mercia Mudstone, which now forms a low escarpment. All the strata dip gently to the east at an angle of 2-3°.

Recent drift deposits, including sands, gravels, silts and clays, commonly overlie these strata throughout the area. They can be glacial in origin, but alluvial deposits associated with river systems are a more dominant feature. The Doncaster area is particularly notable for its complex drift sequence, which varies in depth and spatiality.

2.2.4 Hydrogeology

The Coal Measures consist mostly of impermeable strata, with occasional thin sandstone beds, from which limited supplies of groundwater can be obtained. The quality of the water can be poor, with high concentrations of chlorides and sulphates.

The Lower Magnesian Limestone is capable of providing substantial water supplies if well-developed fissure systems are intersected during drilling. However,



exploratory work would need to be undertaken to determine the yield and quality of such water.

The main aquifer in the LEAP area is the Sherwood Sandstone. This also continues outside the area to the east, under the Mercia Mudstone. The significance of this, is that abstractions that take place outside of the plan area will have a 'knock-on' effect on the water resources in the Idle & Torne area, and should therefore be taken into consideration.

Groundwater in the Sherwood Sandstone flows in an east to north-easterly direction. The aquifer is heavily utilised and the patterns of abstraction cause some stretches of river to contribute water to the aquifer while others receive water from it. Over-abstraction has caused falling water levels and environmental damage in some areas.

The quality of the groundwater is very good, apart from the elevated levels of nitrate in the outcrop area, resulting from excessive leaching of agricultural nitrate. This high nitrate does not occur under the protective cover of the Mercia Mudstone although there is a danger of high nitrate outcrop water being drawn into this confined region by abstraction.

Recharge to the sandstone is affected by the drift sequences, especially in the Doncaster area, which also make it difficult to determine how water level changes in the sandstone will affect the surface water features. The depth of the unsaturated zone can vary from 0m in the low-lying areas and 50m under the higher ground.

2.2.5 Natural radiation

We are all exposed to natural radiation all the time. Most people receive their greatest dose or exposure from natural radiation, mainly from radon. Radon is a natural radioactive gas. It comes from uranium that occurs naturally in all rocks and soils and is given off at the ground surface. We all breathe it throughout our lives. Out of doors, it disperses in air so levels are very low, but it can build up in enclosed spaces such as indoors where ventilation is poor.

The average radon level in homes in the plan area is about 24 Bq m⁻³. This is very low and well below the "Action Level" dose of 200 Bq m⁻³ recommended in the National Radiological Protection Board's Control Strategy in 1990.

2.2.6 Waste disposal/treatment

Statistics regarding waste are collated in county and district areas. The LEAP area

covers 9 such administrative boundaries. As Nottinghamshire is the largest county in the LEAP area, information regarding that county has been included below.

In Nottinghamshire an Agency study determined that 2.3 million tonnes of waste was landfilled in the county during 1998/99. The types of wastes landfilled were pulverised fuel ash and furnace bottom ash (39%), construction/demolition waste (20%), household wastes (17%) and trade waste (15%).

Household and some commercial waste is also incinerated, at the Eastcroft municipal solid waste incinerator in Nottingham (outside of the LEAP area) which produces heating and power for parts of the city.

Clinical waste is disposed of outside the plan area at one of the two operational incinerators in the East Midlands. There is one at Nottingham City Hospital, which mainly treats clinical waste originating from the hospital, and the other has recently been built on the site of the Eastcroft Municipal Waste Incinerator in Nottingham.

2.3 Air

2.3.1 Air quality

The Agency's role in the control of air quality comes mainly through regulation of emissions to air from major industrial processes. These are regulated under Part A of the Environmental Protection Act 1990.

Air quality may be significantly influenced by other sources not controlled by the Agency, such as aircraft, traffic, smaller industries and domestic sources. The main responsibility for delivery of the Government's National Air Quality Strategy lies with local authorities, although the Agency plays a role through its regulation of emissions from major industries.

The Government has recently revised the National Air Quality Strategy and the compliance dates for the various air quality objectives have been brought forward to 31 December 2003 (from 2005) in the case of benzene, 1, 3 butadiene and carbon monoxide. For lead, PM₁₀ and sulphur dioxide (1 hour and 24 hour means) the objectives are to be achieved by 31 December 2004. The objective dates for nitrogen dioxide and the 15 minute means for sulphur dioxide remain unchanged. As part of the strategy local authorities have been asked to review and assess air quality within their areas by September 2000 and, where they identify a likely breach of those objectives, to designate them as Air Quality Management Areas.



Power Station

Air pollution may be in the form of gas or particulate matter and its impact may be local or widespread. Pollutant dispersion from Part A processes is complex and depends on the height at which it is discharged, its physical properties, the prevailing weather conditions and the local topography. Local effects tend to arise from polluting gases or dusts grounding prematurely rather than remaining airborne, for example odours and dust deposition. Widespread effects can include secondary formation of low level ozone (e.g. from emissions of volatile organic compounds), acidification of soils and watercourses from emissions of acid gases, depletion of stratospheric ozone and the 'greenhouse effect' both of which contribute to global warming.

2.4 Water

2.4.1 Surface water quality

The five main tributaries, which feed the Idle/Torne river system, all rise on the western edge of the plan area from coal measures or limestone strata. The headwaters are of good quality; however, it is a feature of the catchment that each of the tributaries receives significant effluent discharges in their upper sections. This is the single most important factor determining river quality in the area.

The rivers Maun, Meden and Poulter all feed in-stream lake systems and the presence of treated sewage effluent in low dilution has raised the concentration of nutrients, causing eutrophication. The Idle, Meden and Maun catchments have been designated as sensitive areas under the EC Urban Waste Water Treatment Directive. The Rivers Ryton and Torne are also affected by sewage effluent and urban runoff. The River Ryton requires a pumped release of good quality groundwater to replace the loss of water to Chesterfield Canal and to dilute Worksop Sewage Treatment Works effluent. Both rivers recover sufficiently to support good coarse fisheries in their lower reaches.

Discharges from mines have had significant effects on all the tributary rivers in the past. Despite the colliery closure programme, there are currently discharges of minewater to each of the main rivers in the plan area.

Significant quality improvements have taken place in the River Idle and its tributaries within recent years and this has led to a large number of uses now being made of the river.

2.4.2 Fisheries

The plan area provides a diverse range of fisheries. The upper reaches of the rivers Ryton, Meden and Poulter have excellent native brown trout populations. Downstream, these rivers are dominated by mixed coarse fisheries, where chub, dace, roach and eels are the most important species.



Electric fishing on the River Idle

In contrast, fish populations in the River Maun have been detrimentally affected by the impact of major conurbation's at the headwaters of its catchment.

The Idle is characterised by poor habitat structure. The fish populations are variable in quality and quantity usually associated with availability of fish holding habitat. The Torne provides an improved fisheries habitat, given the presence of extensive aquatic plant life for refuge and spawning.

The Idle & Torne are both dominated by roach, bream and eels, with perch, tench and pike being locally important.

Stillwater fisheries are widely available in the LEAP area, providing both coarse and trout fishing, and canals in the area are popular fishing venues, with major angling events taking place on the Stainforth and Keadby and the Chesterfield Canal.

2.4.3 Recreation

There are many lakes in the Idle & Torne area, some associated with the Dukeries estates. Some are fished, such as Langold, Harthill, Kingsmill, Welbeck, Thoresby and Sandbeck. Many of the numerous

IDLE & TORNE



gravel pits are also fished. Rufford Lake is an amenity area with no fishing. The Rivers Torne, Idle, Three Rivers and Warping Drain are fished by angling clubs, whereas informal fishing tends to occur on the Rivers Ryton, Meden and Maun.

Gravel pits in the Idle catchment are used for sailing, board-sailing, jet ski-ing and power boating, and Kingsmill Reservoir is used for sailing purposes. The River Torne is occasionally used for school canoeing, and boating and canoeing takes place in the River Idle below Bawtry.

Local authorities, riparian owners and volunteer groups have provided footpaths along various tributaries, sometimes with the help of the Agency. These provide increased access for walkers.

The River Idle, downstream of Bawtry, has an ancient right of navigation. The River Idle Flood Alleviation Scheme interrupted this navigation by building a pumping station at West Stockwith. However, a guillotine gate was installed and this may be lifted to allow the passage of boats when the levels between the River Trent and the River Idle are suitable.

There are two canals in the catchment, the Chesterfield Canal and the Stainforth and Keadby Canal. Both of these waterways are managed by British Waterways.

The large Dukeries estates offer many attractions for visitors. These attractions consist of activities such as walking, cycling and birdwatching. There are visitor centres at Sherwood Forest and the Major Oak, Clumber Park, Rufford Park and Creswell Craggs.

The Greenwood Community Forest covers 161 square miles of Nottinghamshire countryside and includes the historic Sherwood Forest and provides recreational opportunities such as walking, cycle routes and bridleways.

2.4.4 Flood defence & land drainage

The majority of land in the lower reaches of the Rivers Idle & Torne lies below high tide level in the River Trent, and has suffered local land drainage problems in the past.

The Isle of Axholme area, to the north of the LEAP area, lies below sea level. Reclaiming this land from the sea began in medieval times when drainage ditches were dug to control flooding. In the 17th Century, King Charles I engaged a Dutchman, Cornelius Vermuyden to implement large-scale land drainage works in this area.

The drainage of the area now relies on a comprehensive system of pumped drainage and flood defences. To maintain

drainage in the area, water is pumped from the low-lying drains to higher level carrier watercourses, and thence to the River Trent. Water is let back into the low-lying drains in dryer months to meet local agricultural abstraction needs. The Agency and Internal Drainage Boards (IDBs) operate pumping stations, and protect local land from waterlogging and flooding. Maintenance of the floodbanks on the high level watercourses is essential to provide continual flood protection.

The upper reaches of the River Idle & Torne are predominantly urbanised. Surface water from these urbanised areas has led to the reconstruction and modification of these watercourses under capital improvement schemes to improve flow capacity and to provide a level of protection to varying standards.

The Agency has general supervisory roles over all matters relating to land drainage. However, responsibility for the maintenance of any watercourse normally rests with the riparian landowner. On designated main rivers the Agency has permissive powers to construct and to control the actions of others. On ordinary watercourses, District and County Councils have permissive powers to carry out works and make bylaws, but their works require the approval of the Agency. The IDBs have broadly the same powers as the Agency within their areas, including the power to levy drainage rates to fund improvement schemes and permissive powers to carry out drainage works on their awarded drains.

River Torne

The improvement scheme carried out on the River Torne in the 1990's was designed to discharge a 1 in 10 year flow with freeboard (safety margin) that equates to a bankfull flow of 1 in 30 years. Further raising of the flood defences is not practical, or cost effective, as the floodbanks are built on underlying peat and increasing the height only results in settlement. The Agency therefore has a programme of regular monitoring of the defences and any settlement is put right as part of our maintenance works.

The Flood Defence Standards of Service (as described in the Environmental Overview, page 36) are assessed using MAFF Land Use Bands. The River Torne falls within Land Use Band C, which gives a target standard of protection for fluvial watercourses between 1 in 5 year and 1 in 50 year return period. The River Torne flood defences meet this required standard of service. Increasing run-off from development in the Doncaster area could

put these standards at risk if the defences are not properly managed. Most urban run-off in the Doncaster area is balanced to reduce peak flows and soak-away drainage is in use.

River Idle

The main tributaries of the River Idle are the Ryton, Maun, Meden and Poulter. These take urban run-off from Worksop, Mansfield and a small part of Rotherham. The tributaries combine near Elkesley to form the Idle, which flows through a fertile valley before being discharged to the River Trent via West Stockwith pumping station.



West Stockwith Pumping Station

A comprehensive flood defence scheme on the stretch of the Idle between Retford and the River Trent protects over 300 properties and 1000 hectares of agricultural land.

The upper tributaries of the Idle, and the Rivers Maun, Meden, Ryton and Poulter have wide floodplains, steep-sided valleys, and periodic flooding of adjacent farmland has occurred in the past. Works have been carried out to improve the flow capacity to take run-off from the urban areas of Mansfield and Worksop, and to rectify problems caused by mining subsidence.

2.4.5 Flood warning

The Agency operates a flood warning service across England and Wales. Since September 1996 the Agency has taken the lead role in passing flood warnings to people at risk in order that they can take the necessary action to protect themselves and their properties. The latest technology is used to monitor rainfall and river levels for 24 hours a day, 365 days a year so that timely and effective warnings are sent to people and property at risk in those situations where this is technically and financially feasible. Flood warnings are issued to the emergency services, local authorities, local media and members of the public located in areas considered to be at high probability of river flooding. The

Agency also provides Floodline, a 'dial and listen' service, which provides 24 hour recorded information on the latest flooding situation.



Floodline awareness campaign – September 2000

There is currently no flood warning service provided by the Agency specifically for the Rivers Idle & Torne. Following the completion of the improvement schemes on the Idle & Torne, there are very few properties known to be at significant risk of flooding from Main River on either watercourse. The cost of improved telemetry and modelling to enable a flood-warning scheme to be implemented cannot be justified at present. However the Agency does operate a Flood Watch service which uses rainfall predictions in conjunction with ground conditions to issue a warning when it considers that flooding is possible in the general area. The Idle and Torne catchment falls within the Flood Watch for the Lower Trent Valley including Nottinghamshire, Gainsborough, Scunthorpe and Doncaster. When the Agency considers that flooding is possible in this area, local radio and television stations will broadcast the relevant information to the public. Following the Easter Floods on 1998, the Agency has produced a Flood Warning Strategy and future extensions of the Flood Warning Service may be possible.

It should be noted that the Agency uses the best information available to predict the possibility of flooding but no warning system can cover every eventuality. It is the responsibility of those who live in flood prone areas to be aware of any risk, and to know what action should be taken to protect themselves and their property if flooding occurs.

2.4.6 Water resources

The majority of water abstracted in the plan area comes from the Sherwood Sandstones aquifer, mainly for public water supply purposes. Historically this aquifer has been heavily exploited. In large areas abstraction exceeding long term recharge

IDLE & TORNE



has resulted in lowering of the water table causing depletion of flow in rivers and streams and damage to surface water features together with wetlands dependant on a high water table. To the west of the Sherwood Sandstone is the Lower Magnesian Limestone aquifer. Because limestone is much less permeable than sandstone it results in poorer yields.

Groundwater resources have also been extensively developed for use in association with coal mining activities. Over the past 15 years there has been a rapid decline and many licences have been revoked. In contrast there has been an increase in demand for irrigation water for agricultural use. In addition, food processing companies, especially in the Worksop area, also use groundwater resources along with increasing demands from the recreational industry, such as golf courses. For mineral washing purposes, sand and gravel extraction companies retain large volume groundwater abstraction licences, many of which are not used to their full capacity.

There is no surface water abstraction for public water supplies in the plan area. Extensive development of the surface water resources has however taken place to meet spray irrigation demands. The only other major abstraction from rivers is the British Waterways abstraction at Worksop in the Chesterfield Canal.

The control and management of these various demands requires the Agency to monitor the state of the resources through a network of monitoring sites and information obtained is used for long term planning and for making operational decisions to limit the impact of large abstractions.

2.4.7 Wildlife

The Idle & Torne area supports a wide range of habitats that are of wildlife value. These include 48 Sites of Special Scientific Interest (SSSI's). In addition there are seven Local Nature Reserves and one National Nature Reserve. There are also two candidate Special Areas of Conservation at Thorne Moors and part of Sherwood Forest, Birklands and Bilhaugh.

The key species for the Agency in the plan area include water vole, otter, white clawed crayfish, barn owl and Daubentons bat.

2.4.8 Heritage

The cultural heritage of the plan area is rich and diverse. There are 48 Scheduled Ancient Monuments and in excess of 600 other sites of archaeological interest in the area.

The Humberhead Levels are noted for finds from Palaeolithic period through Bronze Age, Iron Age, and Roman to the Post-Medieval period. The peat in the area has preserved many remains, and dewatering of this resource had led to degradation of peat deposits and buried organic structures. Reduction in groundwater levels is also a matter of concern to the archaeological status of the area.

The caves at Creswell Crags are of world-renowned status, being Palaeolithic and later prehistoric sites. There are Roman remains at Styrrup-with-Oldcotes, Edlington and Tickhill.

3. Review of the public consultation process

3

Review

3.1 Summary of public consultation

The Environment Agency is committed to full consultation through all stages of the LEAP process. During the compilation of the Idle & Torne LEAP Consultation draft and following its publication in November 1999, we undertook extensive consultation with interested parties and the general public.

This chapter reviews the consultation process and provides a brief summary of some of the comments and our actions in response. A more detailed review of the comments, including individual responses, is given in a separate document entitled '*Statement of Public Consultation*', copies of which are available from the Agency's Lower Trent Area office.

3.1.1 Informal consultation

In June 1999, the Agency wrote to 116 key groups, local authorities and other representative bodies, asking for comments on our initial list of issues and problems affecting the environment in the Idle & Torne catchment. In total 31 organisations responded. All comments from this initial consultation were considered and where appropriate, were incorporated into the consultation draft. Agency staff and input from the Lower Trent Area Environment Group developed the document.

3.1.2 Formal consultation

The Idle & Torne LEAP consultation draft was launched on 18 November 1999. This marked the start of the formal three-month consultation period, which ended on 29 February 2000. During this time the consultation draft was promoted by:-

- Wide distribution of the Summary Leaflet
- Display boards about the LEAP, which toured libraries in the plan area
- Copies of the report placed on deposit at Local Authority offices and libraries
- Press releases

3.2 Summary of responses

A total of 44 responses to the consultation were received – 23 letters and 21 questionnaires. The response was encouraging with those consultees that responded representing a wide cross-section of interests. A list of those who commented is included in Appendix one. All letters and questionnaires were acknowledged during the consultation period when received. Some letters were also sent to consultees if the comments raised required a more detailed response.

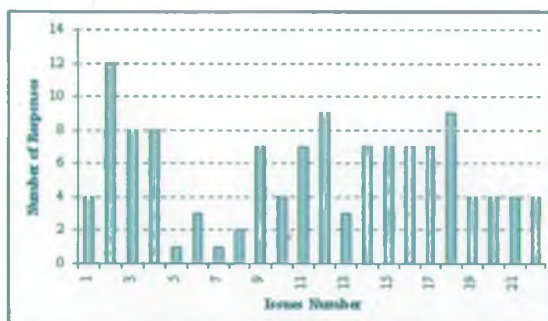
All comments have been considered, and where appropriate and practicable, incorporated into this Action Plan. During the consultation process and via the responses, many organisations expressed an interest in working in partnership with the Agency towards resolving the issues highlighted in the LEAP. We received many helpful and welcome suggestions.

The consultation process has given us a more comprehensive understanding of the issues and options presented in the LEAP and of the public's concern for the plan area. In addition to the issue specific responses, there were a number of important general points raised by the consultation process.

The key message from the responses is that the LEAP process and its aims are worthwhile. The Idle & Torne LEAP is seen as a move in the right direction for both the Agency and the environment. The questionnaires asked for people to rank the issues in the consultation draft that they considered were the most important.

Of the responses received the most important issues were:

- Issue 3 – Low flows in the LEAP area
- Issue 6 – Impact of abstraction of water from the River Ryton for the Chesterfield Canal
- Issue 9 – The need for integrated water quality planning
- Issue 12 – Lack of recreational access along watercourses



The number of responses to each issue

The graph above demonstrates that the most popular issues (those most frequently referred to in the rankings) were:

- Issue 2 – Balancing the needs of the environment with the needs of surface water abstractors
- Issue 12 – Lack of recreational access along watercourses
- Issue 18 – Biodiversity of local habitats

The letters and questionnaires raised a number of potential new issues:

- Involvement of local farmers and landowners who occupy most of the rivers in the decision making process
- Potential flood risk to the east of Retford
- Creation of an ecological and recreational corridor along the River Idle
- Promotion of canoeing on watercourses in the LEAP area
- Relationship of the LEAP with other plans
- The impact of mine water waste on Millwood Brook
- Water quality of Sookholme Brook
- Traffic congestion and associated pollution
- Disposal of waste tyres
- Effects of sewage disposal on watercourses
- The effect of deep borehole water abstraction
- Composting
- Short rotation coppice
- Cycle routes along watercourses
- Effects of mine closures and proposed landfills
- Hedgerow restoration

The Agency has considered the responses received and the new issues raised. Where appropriate comments have been incorporated into the Action Plan and as a result of the consultation process some issues have been amended. No new issues have been included in the Idle & Torne LEAP as a result of the comments received as they are either already incorporated into the Agency's everyday work or the Agency has limited responsibility. However, the comments have helped to highlight those issues that external organisations would like to be tackled and will help us during our own workload planning exercises.

3.3 Further action

A number of changes to the issues, options and proposals have been made as a result of the public consultation. Suggested new actions have been incorporated under existing issue headings where appropriate. The Action Plan reflects a balance between the opinions expressed and the need to ensure a feasible and workable plan.

4. Actions

4

Actions

4.1 Implementation

Implementation of the plan is based on the 18 key issues set out below. Actions to resolve issues are intended to be SMART (Specific, Measurable, Agreed, Realistic and Time based) and as such the plan represents a non-recurring investment by the Agency and others in the plan area.

The consultation process led to general support for the issues identified by the Agency. Many of the options have been carried through into the activity tables but some alterations have been made and new approaches taken. There are some issues and options for action that appeared in the consultation draft but have since been removed or completed. Appendix two describes the reasons why certain issues and actions are no longer included in the LEAP.

A number of actions will require feasibility studies and an appraisal of options prior to work commencing. In some cases, depending on the outcome of these studies, further action may not be required. The timescales for actions may vary depending on future changes within the issue, but all changes will be reported in the subsequent annual reviews.

4.2 Issues

- Issue 1 Adverse effects of peat milling on the environment
- Issue 2 Balancing the needs of the environment with the needs of surface water abstractors
- Issue 3 Low flows in Rainworth Water
- Issue 4 Loss of wetland status of conservation sites in the LEAP area
- Issue 5 Impact of the abstraction of water from the River Ryton for the Chesterfield Canal
- Issue 6 Lack of flow data in relation to the River Torne
- Issue 7 Lack of spawning substrate and holding pools for spawning fish on the lower Idle
- Issue 8 The need for integrated water quality planning
- Issue 9 Lack of recreational access along watercourses
- Issue 10 Atmospheric pollution from power stations
- Issue 11 Groundwater quality at risk
- Issue 12 Detrimental effects of nutrients on water quality and biodiversity

- Issue 13 The impact of collieries on the environment
- Issue 14 Local biodiversity
- Issue 15 Lack of habitat diversity in the Idle & Torne catchment
- Issue 16 Fly-tipping, litter and aesthetic pollution
- Issue 17 Landspreading of waste
- Issue 18 The extent of floodplains are not clearly defined

4.3 Environmental Themes

The icons or pictures shown within the action tables relate to the Agency's 'Environmental Themes'. These relate to national Agency targets set out in the publication 'An Environmental Strategy for the Millennium and Beyond' (1997). A copy of this document is available from our Customer Contact Team at the Lower Trent Area office.



Addressing CLIMATE CHANGE



Improving AIR QUALITY



Managing our WATER RESOURCES



Enhancing BIODIVERSITY



Managing our FRESHWATER FISHERIES



Delivering INTEGRATED RIVER-BASIN MANAGEMENT



Conserving THE LAND



Managing WASTE



Regulating MAJOR INDUSTRIES



Abbreviations

AMP	Asset Management Plan
Agency	Environment Agency
AWS	Anglian Water Services
BAP	Biodiversity Action Plan
BDC	Bassetlaw District Council
BW	British Waterways
CA	Coal Authority
CO	Coal Operators
DETR	Department of the Environment, Transport and the Regions
EH	English Heritage
EN	English Nature
FWAG	Farming and Wildlife Advisory Group
GGF	Greenwood Community Forest
H&OT	Hawk and Owl Trust
IDB	Internal Drainage Board
LA	Local Authority
LO	Landowners
LPA	Local Planning Authority
MAFF	Ministry of Agriculture, Fisheries and Food
MoU	Memorandum of Understanding
NAQS	National Air Quality Strategy
NCC	Nottinghamshire County Council
NVZ	Nitrate Vulnerable Zone
PSO	Power Station Operators
R	Recurring costs
RJB	RJB Mining Limited
RNG	Recreation and Navigation Groups
RO	Riparian Landowner
RQO	River Quality Objective
RSPB	Royal Society for the Protection of Birds
SAM	Scheduled Ancient Monument
SINC	Site of Importance for Nature Conservation
SSSI	Site of Special Scientific Interest
STW	Severn-Trent Water Ltd
TBG	Tidy Britain Group
TDFG	Tickhill and District Footpath Group
TREG	Torne River Environmental Group
U	Unknown costs
UK	United Kingdom
UoS	University of Sheffield

UWWTD	Urban Waste Water Treatment Directive
WLMP	Water Level Management Plan
WQO	Water Quality Objective
WT	Wildlife Trust
YWS	Yorkshire Water Services

Issue 1: Adverse effects of peat milling on the environment

Objective – To assess and reduce the detrimental effects of peat milling on the environment






The moors in the north of the LEAP area, the Humberhead Levels (a National Nature Reserve) contain rich peat deposits, including the largest intact area of peat in England, Thorne Moors, which is a Special Area of Conservation. Both Thorne and Hatfield are also proposed Special Protection Areas.

Peat milling is a method of removing the peat for use as a fuel or in the horticultural trade. It involves the dewatering of the peat deposits and can lead to acidic drainage, which is high in metals. This impacts on surrounding watercourses and affects the aquatic invertebrate and plant life. Local Planning Authorities govern the milling of peat through the planning process and planning permissions exist for peat milling in the Idle & Torne area.

The exploitation of peat is causing destruction to a valuable habitat. Lowland raised peat moors are important habitats for fauna and flora and over four thousand species of plants and animals live on the moors. The Royal Society for the Protection of Birds and the Wildlife Trusts are just two organisations campaigning to save the peat moors, which are of outstanding importance for birds.



Thorne Moors

ACTIONS	THEME	RESPONSIBILITY		Total Cost (£k)	00 /01	01 /02	02 /03	03 /04	04 /05	FUTURE	AGENCY OFFICER
1.1 Raise awareness of loss of important national resource and support English Nature in the proposals for SAC and SPA designations	 	Environment Agency	EN WT RSPB	R	●	●	●	●	●		Valerie Holt
1.2 Investigate further cause of pollution from land drainage and instigate pilot study on designated part of catchment to examine effects of changing pumping regime as part of Hatfield Chase WKMP	 	Environment Agency	-	R		●	●				David Briggs
1.3 Assess the extent of the problem by analysing recent chemical and biological data		Environment Agency	-	R		●	●				Steve Burton

Issue 2: Balancing the needs of the environment with the needs of surface water abstractors



Objective – To achieve a satisfactory balance between the needs of abstractors and the environment

The Agency issues licences for water abstraction and has a duty to balance the impact of these abstractions with land drainage, flood defence, water quality and conservation needs. In the Idle & Torne area there are large numbers of agricultural spray irrigation licences. This means that during dry periods, difficulties arise in meeting these demands, and to maintain sufficient water quantity, some augmentation is required.

Warping Drain

During the summer months, tidal River Trent water is let back into the Warping Drain to sustain water levels to allow the abstraction of water for spray irrigation. An assessment of the effects of increased salinity and suspended solids on invertebrate populations, water quality and fisheries has been carried out. This study indicated that let-back to the drain was not causing any major problems and the recommendation is that, subject to agreed operational procedures, the time-limited abstraction licences can be extended.





The Water Level Management Plan (WLMP) is still required to establish the effects of higher water levels on riparian vegetation, wildlife and recreational use and ensure water level requirements for a range of activities in the area can be balanced and integrated.

River Idle

The River Idle is an EC-designated fishery and incorporates the Idle Washlands SSSI. It is a drainage system, which utilises both gravity and pumping. The adjacent landowners rely on adequate drainage in winter to prevent flooding of the land. Water is pumped from Gringley Carr (an area of low-lying land) into the Idle and West Stockwith pumping station then gravitates or pumps water from the Idle into the River Trent. During the summer, land users rely on abstraction from Gringley Carr and the Idle for spray irrigation of crops. Water is let back from the Idle into the Gringley Carr system to maintain water levels. Operating levels set out in the Water Level Management Plan allow water levels to be maintained for abstraction. At times of low river flows this can cause ponding of the River Idle in the lower reaches and gives rise to eutrophic conditions, causing the EC Fishery quality objective to fail. Drainage requirements for agriculture need to be adequately balanced with conservation, water quality, land drainage and recreation.



Water let back into Warping Drain

ACTIONS	THEME	RESPONSIBILITY LEAD	OTHER	Total Cost (£k)	00 /01	01 /02	02 /03	03 /04	04 /05	FUTURE	AGENCY OFFICER
2.1 Produce a WLMP for Warping Drain	 	Environment Agency EN	IDB RO LA	10		10	●	●	●	●	Valerie Holt
2.2 Implement any recommendations from WLMP's	 	Environment Agency	IDB FWAG	20	20	●	●				Mick Walker

Issue 3: Low flows in Rainworth water

Objective – To evaluate the factors governing a lack of water and to introduce remedial work via partnerships where appropriate

Groundwater abstraction for public water supply has virtually eradicated baseflow in Rainworth Water. During dry periods, the only flow is the discharge from Rainworth and Bilsthorpe Sewage Treatment Works. Mining subsidence in the vicinity of the watercourse has also, in the past, lead to the loss of water to the underlying sandstone. Rainworth Lake (or L Lake) SSSI also reportedly suffers from low water levels.



A hydrogeological study has been completed to determine what effect, if any, licensed abstraction was having on the Rainworth Lake SSSI. It concluded that although the lake itself was not directly

adversely affected in terms of leakage to the underlying strata the two tributaries that feed into the lake had been reduced in volume due to public water supply abstraction.

A business case for Rainworth Lake SSSI was prepared by the Agency for submission to AMP3. Indications are that improvements will be undertaken in the next 3 years.



Rainworth Lake

ACTIONS	THEME	RESPONSIBILITY LEAD	OTHER	Total Cost (£k)	00 /01	01 /02	02 /03	03 /04	04 /05	FUTURE	AGENCY OFFICER
3.1 Implement solutions identified in business case at Rainworth Lake		Environment Agency STW	EN	200			200				Monica Garcia-Acebes
3.2 Monitor improvements in flow in Rainworth Water downstream of L Lake. Define and agree most favourable option		Environment Agency STW	EN NCC	R		●	●	●	●	●	Monica Garcia-Acebes

Issue 4: Loss of wetlands status of conservation sites in the LEAP area

Objective – To determine factors that are adversely affecting the status of wetlands

There has been deterioration in the status of some wetlands in the Idle & Torne area due to a number of factors including licensed ground and surface water abstraction, land drainage operations, peat extraction and also dewatering with sand & gravel quarrying. Particular areas of concern are the Idle Washlands SSSI, the Thorne & Hatfield Moors SSSI,

and wetlands to the south and east of Doncaster.

Idle Washlands SSSI

The Idle Washlands SSSI was originally part of a much larger area that flooded extensively most winters. This wet grassland area does not flood as extensively as previously and the cause is being investigated. Very few birds now use this area as a winter feeding ground. English Nature and the RSPB wish to see groundwater levels recover under the



washlands to improve retention of floodwater and encourage winter-feeding of birds. One important investigation is to determine the hydraulic relationship between river flows and surface and groundwater levels, and their effects on the Idle Washlands SSSI.

Thorne and Hatfield Moors SSSI

The peatland areas of Thorne and Hatfield Moors are nationally important and are designated as SSSI's for the conservation value of their diverse wetland habitats. They are the only remnants of the once extensive lowland raised mire systems of the Humberhead levels. The decline in the status of the moors is due to a number of factors, which could include groundwater abstraction and peat, sand & gravel extractions. These moors are also proposed Special Protection Areas and proposed candidate Special Areas for Conservation.



Hatfield Moors










There is a need to determine if groundwater abstraction from the Sherwood Sandstone is adversely affecting the wetland habitat in the overlying superficial deposits on Thorne and Hatfield Moors.

Wetland areas to south and east of Doncaster

There are 22 other wetland sites important for their ecological, conservation, recreational and archaeological interest in the Doncaster area (listed in the following table). These sites were the subject of a study in 1991 by the National Rivers Authority and Yorkshire Water Services and another survey was commissioned by the Environment Agency in November 1998. The report produced indicated no improvement in the status of the wetland since 1991 and all of the sites showed some damage. The findings of this report will be used in formulating possible revisions in policy governing the factors which, either individually, or collectively are thought to be the cause of the deterioration.

Wetland sites in the Doncaster area

Epworth Turbary SSSI	Rossington Bridge SINC
Haxey Grange Fen SSSI	Rossington Roman Fort SAM
Potteric Carr SSSI	Rossington Roman Potteries SAM
Sandell Beat SSSI	Stancil Roman Villa SAM
Blaxton Common SINC	Armthorpe Balancing Reservoir
Cantley Park Lake SINC	Bank End Fisheries
Crow Wood SINC	Blaxton Carr Side
Doncaster Common SINC	Hatfield Marina
Finningley Gravel Pits SINC	Lindholme Lakes
Gravel Hill Pond SINC	Sandtoft Peatland
Pickle Wood SINC	Tyrham Hall Lake

ACTIONS	THEME	RESPONSIBILITY LEAD OTHER	Total Cost (£k)	00 /01	01 /02	02 /03	03 /04	04 /05	FUTURE	AGENCY OFFICER
4.1 Re-survey elevations of the monitoring locations to understand the Idle Washlands system	 	Environment Agency	5	5						Monica Garcia-Acebes
4.2 Monitor the river and groundwater levels associated with the Idle Washlands SSSI	 	Environment Agency	R	•	•	•	•	•	•	Jason Fairbairn
4.3 Evaluate the factors controlling flooding of the Idle Washlands SSSI	 	Environment Agency EN RSPB EH	R	•	•	•	•	•	•	Monica Garcia-Acebes
4.4 Assess available data sets for the Thorne and Hatfield Moors to gain understanding of their linkages to the water environment	 	Environment Agency	15	15						Jason Fairbairn
4.5 Work with YWS to reduce the rate of abstraction from the Sherwood Sandstone in order to improve the wetlands in the Doncaster area	 	Environment Agency YWS	R	•	•	•	•	•	•	Elfyn Parry

Issue 5: Impact of the abstraction of water from the River Ryton for the Chesterfield Canal

Objective – To draw up an operating agreement between the Agency and British Waterways to ensure the optimum use of water abstracted from the river for canal usage

British Waterways has rights to abstract water from River Ryton at Brancliff and Worksop, also from the headwater of the River Ryton via the reservoirs at Pebley and Harthill. The water is used to enable the Chesterfield Canal to operate. These rights are incorporated into the Enabling Acts for the construction of the canal. The canal is an SSSI and navigation route from the River Trent to Norwood Tunnel. The length from Chesterfield to Norwood Tunnel (outside of the LEAP area) is being investigated for restoration to full navigation.

During periods of low flow the canal can take the majority of the flow from the River Ryton. This has an impact on the available dilution for the effluent from Manton Sewage Treatment Works, as well as on the ecology of the river. Downstream requirements for existing spray irrigation licence holders can also be affected. The canal is vulnerable to nutrients present in the Rivers Ryton and Idle, which could lead to a proliferation of plant growth and threaten the SSSI on the canal. There is also some demand for increased spray irrigation abstraction from the canal itself.

A Memorandum of Understanding between the Agency and British Waterways is now in draft form and it is anticipated that both parties will sign it by the end of October 2000. This agreement will result in a trial being undertaken over the next 2

years to establish joint rules to ensure best usage of water resources for both the river and the canal.



Tapton Lock, Chesterfield Canal

LOCAL ENVIRONMENT AGENCY PLAN

IDLE & TORNE



ACTIONS	THEME	RESPONSIBILITY LEAD OTHER	Total Cost (£k)	00 /01	01 /02	02 /03	03 /04	04 /05	FUTURE	AGENCY OFFICER
5.1 Secure formal operating agreement between Agency and British Waterways		Environment Agency BW	R	●						John Ratcliffe
5.2 Carry out a two-year trial of MoU control rule and modify as necessary		Environment Agency BW	R	●	●					John Ratcliffe
5.3 Investigate group licence for abstraction from the Chesterfield Canal using information obtained from above		Environment Agency BW	R		●	●				John Ratcliffe Trevor White

Issue 6: Lack of flow data in relation to the River Torne

Objective – To improve understanding of the relationship between the River Torne and the underlying aquifer

The Sherwood Sandstones aquifer outcrops from north of Nottingham to Doncaster. All the main rivers traversing the aquifer (except the River Torne) have gauging stations. These monitor flow levels where the rivers flow on to the aquifer. Flows are only measured on the River Torne at Auckley, situated towards the eastern part

of the aquifer. No flows are recorded where the Permian Marls give way to the sandstones, west of Tickhill. Due to a lack of flow data, the hydraulic relationship between the river and the underlying heavily abstracted sandstone is not fully understood. Although some flow studies tend to show the River Torne to be losing water to the aquifer, it is important to determine this relationship in order to assist in major water resources studies.

ACTIONS	THEME	RESPONSIBILITY LEAD OTHER	Total Cost (£k)	00 /01	01 /02	02 /03	03 /04	04 /05	FUTURE	AGENCY OFFICER
6.1 Construct a gauging station to measure flow in the River Torne	 	Environment Agency	200				200			Andrew Pimperton

Issue 7: Lack of spawning substrate and holding pools for fish on the Lower Idle

4

Actions

Objective – To reinstate in-stream features, which in turn create spawning areas and pools

In order to spawn, fish require suitable gravel areas, weed and pools. River engineering in the lower reaches of the River Idle has created a channel that is too straight and deep to allow shallow areas of

gravel and weed needed for spawning fish. The river requires improvements in its channel features to encourage fish to spawn. An area upstream in the middle Idle has had experimental structures introduced and these are being monitored. Initial indications are good and indicate that further and novel structures should be introduced.

ACTIONS	THEME	RESPONSIBILITY LEAD	OTHER	Total Cost (£k)	00 /01	01 /02	02 /03	03 /04	04 /05	FUTURE	AGENCY OFFICER
7.1 To plan and build suitable spawning structures in the affected parts of the River Idle		Environment Agency	RO RNG	40				40			Steve Chambers

Issue 8: The need for integrated water quality planning

Objective – Ensure River Quality Objectives are obtained through investment under AMP3 and other integrated river basin improvements. Establish plans to improve inadequate foul and surface water disposal at a number of small developments



The Environment Agency and predecessor bodies set strategic targets called River Quality Objectives (RQOs) for rivers and canals. RQOs provide a basis for water quality management decisions and are based on the River Ecosystem classification scheme. There are five quality classes, RE1 to RE5, which reflect the chemical quality requirements of different types of river ecosystems. There are a number of watercourses in the Idle & Torne area, which could be assigned new RQOs. As part of our aim to achieve major and continuous improvements in water quality, we need to review all RQOs for the Idle & Torne area to ensure they are still appropriate. A review would not necessarily mean a change in the RQOs, but the

changing uses of a watercourse may mean that some need to be altered.

There are also statutory targets for some rivers and canals called Water Quality Objectives (WQOs) to implement EC Directives. The relevant EC Directives are the Surface Water Abstraction Directive (75/440/EEC), the Freshwater Fish Directive (78/659/EEC), the Nitrate Directive (91/676/EEC), the Urban Wastewater Treatment Directive (91/272/EEC) and the Dangerous Substances Directive (76/464/EEC).

River quality in the Idle & Torne area depends greatly on the effluent discharged from water supply and sewage treatment works operated by the water companies (Severn-Trent Water and Yorkshire Water Services). These companies have recently undertaken a strategic planning process called AMP3 (Asset Management Plan), which will involve improvements to their sewerage systems and the associated sewage works so that they meet statutory obligations. The time-scale for the AMP3 programme is 2000 to 2005.



ACTIONS	THEME	RESPONSIBILITY LEAD	OTHER	Total Cost (£k)	00 /01	01 /02	02 /03	03 /04	04 /05	FUTURE	AGENCY OFFICER
8.1 Review the appropriateness of the RQOs in the Idle & Torne area		Environment Agency DETR		R	●	●					Steve Cookson
8.2 Monitor the implementation and effects on water quality of improvements agreed under AMP3		Environment Agency		R	●	●	●	●	●		Steve Cookson

Issue 9: Recreational access along watercourses

Objective – To promote the creation of improved recreational access



The Agency has a duty to promote water-related recreational opportunities. As well as owning and managing our own sites, we also work to improve recreational facilities in partnership with riparian landowners and other organisations, whilst balancing the needs of all water users. The Agency will also take into account conservation aspects and impact on protected species of any site prior to consideration for increased recreational access.

Within the plan area, recreational opportunities include linking the currently disjointed public rights along the Rivers Idle and Torne. There is also a desire to provide a linear walkway along the River

Idle and tributaries, to link Greenwood Community Forest to Sherwood Forest and the parks of the Dukeries further north and onto the River Trent, linking to the Trent Valley Way at West Stockwith.



River Idle near Retford

ACTIONS	THEME	RESPONSIBILITY LEAD	OTHER	Total Cost (£k)	00 /01	01 /02	02 /03	03 /04	04 /05	FUTURE	AGENCY OFFICER
9.1 Promote the creation of new footpath links on the Rivers Idle and Torne through consultation		LA RO Environment Agency	WT TREG TDFG Sustrans	R	●	●					Valerie Holt
9.2 Work with the Greenwood Community Forest to promote waterside footpaths and circular routes		Environment Agency LA GCF		R	●	●	●	●	●	●	Valerie Holt
9.3 Provide where appropriate, facilities for recreational users on Agency owned sites at Bawtry, Warping Drain, River Idle and River Torne		Environment Agency		15	7	8					Valerie Holt
9.4 Work with Bassetlaw DC regarding a recreation corridor on the River Idle in Retford		BDC Environment Agency	WT	R	●	●					Valerie Holt

Issue 10: Atmospheric pollution from power stations

4

Actions

Objective – To obtain maps of the emissions from the relevant power stations and assess impact on surrounding conservation sites

Air quality can detrimentally affect flora and fauna if emission levels are high enough. In order to carry out a sufficient assessment of these emissions it is necessary to first assess the likely concentration of these emissions at ground level. This can be attempted by mathematically modelling the emissions and their characteristics, along with their topographical characteristics, i.e. where the maximum ground level concentrations are likely to occur.

Atmospheric pollution from power stations may be affecting flora and fauna within the plan area. Of special concern are the possible effects of Keadby Power Station upon the sphagnum moss on Hatfield and Thorne Moor SSSI, however there is limited

available knowledge of the effects of pollutants on these areas.

Action may need to be taken as a result of local authority enquiries, within the National Air Quality Strategy (NAQS) where certain threshold levels of pollutants have been recommended. The NAQS sets out levels of certain pollutants that should not be exceeded now and also future limits to be applied from 2005.



Thorne Moors

ACTIONS	THEME	RESPONSIBILITY LEAD	OTHER	Total Cost (£k)	00 /01	01 /02	02 /03	03 /04	04 /05	FUTURE	AGENCY OFFICER
10.1 Obtain maps showing power station emission limits		Environment Agency DETR	PSO LA EN	40	20	20					Andrew Plant
10.2 Assess the likely impact of emissions on conservation areas and how they could be reduced		Environment Agency	LA EN	10	5	5					Andrew Plant



Issue 11: Groundwater quality at risk

Objective – To protect groundwater quality within the plan area

The Sherwood Sandstones aquifer is covered with a light sandy soil suitable for arable agriculture. This has resulted in high nitrate leaching and elevated concentrations of nitrate in the groundwater that is used for public water supply by Severn Trent Water (STW), Yorkshire Water Services (YWS) and Anglian Water Services (AWS). Concerns regarding high nitrate levels in ground and surface waters has lead to the EC Nitrate Directive, which is aimed at reducing nitrate pollution from agriculture. The Directive requires the designation of Nitrate Vulnerable Zones (NVZs) to all

known areas of land that drain into waters where the nitrate concentrations exceed or are expected to exceed 50 mg/l. A total of 68 NVZs have been designated in the UK, including the Sherwood Sandstone aquifer. The new legislation requires greater control and recording of fertiliser use.

Along with elevated nitrate levels groundwater pollution can occur because of the incorrect storage of chemicals and other potentially polluting substances. Such problems have occurred at Clipstone and Harworth. The remediation of groundwater pollution is difficult, costly and often impractical to operate, therefore the prevention of groundwater pollution is therefore vital.

ACTIONS	THEME	RESPONSIBILITY		Total Cost (£k)	00 /01	01 /02	02 /03	03 /04	04 /05	FUTURE	AGENCY OFFICER
11.1 Implement NVZ action programme for the Sherwood Sandstone		Environment Agency	LA LO	R	●	●	●	●	●	●	Jeff Dolby
11.2 Undertake groundwater prevention surveys within SPZs		Environment Agency	LA YWS	U	●	●					Graeme Warren
11.3 Promote best practice for application of fertilisers' etc		FWAG	Environment Agency	U	●	●	●	●	●	●	Steve Cookson

Issue 12: Detrimental effects of nutrients on water quality and biodiversity

Objective – To assess the impact of nutrients from both point and diffuse sources. Ultimately to improve control over such discharges and sources leading to an improvement in biodiversity and aesthetic quality




Phosphate and nitrogen when in elevated concentrations can lead to excessive plant and algal growth within watercourses and standing waters. This process is termed 'eutrophication' and can result in fish kills and reduction in the number and type of organisms able to inhabit the affected watercourse. Within the LEAP area the Idle, Meden and Maun catchments have been designated as areas sensitive to eutrophication.

Sources of phosphate include discharges

from sewage treatment works and smaller discharges that collectively can significantly contribute to nutrient levels. Leaching of nutrients from farmland can also exacerbate the eutrophication problem.



Eutrophication

ACTIONS	THEME	RESPONSIBILITY		Total Cost (£k)	00 /01	01 /02	02 /03	03 /04	04 /05	FUTURE	AGENCY OFFICER
12.1 Ensure suitable facilities are installed to remove phosphate and that the UWWTD is complied with		Environment Agency	FWAG	R	●	●	●	●	●	●	Steve Cookson
12.2 Assess impacts of other non-qualifying discharges		Environment Agency		R	●	●					Steve Cookson
12.3 Carry out cost benefit analysis on small locations requiring phosphate removal		Environment Agency		R	●	●					Steve Cookson

Issue 13: The impact of collieries on the environment

4

Objective – To reduce the impact of collieries on the environment

For many years the Nottinghamshire/South Yorkshire Coalfield was an important coal mining area, but it has declined substantially since the 1960s. As collieries close they can impact significantly on the surrounding environment. The cessation of pumping can lead to uncontrolled discharges of minewater into watercourses or aquifers, affecting public water supplies; reductions in dry weather flows and have detrimental effects on freshwater ecosystems.

Subsidence problems have occurred as a result of mining operations in the Idle & Torne area. Impacts on watercourses can lead to an increased risk of flooding unless remedial works are carried out. Such schemes can be environmentally damaging and in some cases put at risk the continued use of groundwater supplies by uncovering fissures caused by the ground movements. As well as water quality implications, fissures can also lead to a loss of water to the underground strata, leading to environmental damage and the inability of abstractors to utilise abstraction volumes agreed on their licences.

Active and disused collieries within the Idle & Torne area can lead to contamination of local land due the coal extraction process itself or from the associated coal carbonisation industry. Contamination has been identified at collieries at Harworth and Ollerton. Rossington, Thoresby and the former Maltby collieries have also been identified as at risk of contaminating local land.



Clipstone Colliery headstocks

The Agency will consider in detail the environmental implications of the possible closure of other collieries in the Idle & Torne area. Establishing partnerships is important to solving these problems, and we will work closely with the Coal Authority and mine operators.

Actions

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ACTIONS	THEME	RESPONSIBILITY LEAD	OTHER	Total Cost (£k)	00 /01	01 /02	02 /03	03 /04	04 /05	FUTURE	AGENCY OFFICER
13.1 Review the impact of each discharge of mine water on the watercourse and revise consents where necessary		Environment Agency	LA	R	●	●	●	●	●	●	Jeff Dolby
13.2 Monitor loss of resource to river and possible emergence of uncontrolled pollution within the plan area		Environment Agency	CA CO LA	R	●	●	●	●	●	●	Jeff Dolby
13.3 Produce and implement action plan for protection of the aquatic environment		Environment Agency	LA	R	●	●	●	●	●	●	Jeff Dolby
13.4 Identify future areas of mining activity and investigate the impact of subsidence on Main Rivers and serve damage notices as necessary		Environment Agency	CA CO RO LA	30	●	●					Roy Ladhams
13.5 Assess the findings of the RJB study into contamination at Harworth Colliery and implement remediation measures		RJB	Environment Agency LA	R	●	●					Rob Harper
13.6 Work with NCC to achieve the remediation of contamination at Ollerton Colliery		NCC Environment Agency	RJB	U	●	●	●	●			Rob Harper
13.7 Assess the extent of contamination at the former Mansfield Colliery and agree remediation measures		LA Environment Agency	UoS	65	●	●					Rob Harper
13.8 Assess the degree of contamination at Maltby, Rossington and Thoresby Collieries		RJB	LA Environment Agency	U	●	●	●	●			Rob Harper
13.9 Work with Local Authorities and others to establish a mechanism for undertaking the remediation of contaminated land sites		Environment Agency	LA	R	●	●					Clare Bates

Issue 14: Local biodiversity

Objective – To protect rare and endangered animal and plant species and promote diversity in flora and fauna

The Agency is one of a number of organisations with responsibilities for implementing the UK Biodiversity Action Plan (BAP) and will be developing targets for specific species and habitats. This issue looks at those species for which the Agency has some responsibility and others working with other organisations. It also looks at the threat posed by invasive plants and supports the achievement of BAP targets in the Idle & Torne area. BAPs have been prepared for Nottinghamshire, Derbyshire, Severn Trent Water and British Waterways.



Artificial otter holt, River Idle










4

Actions

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ACTIONS	THEME	RESPONSIBILITY LEAD	OTHER	Total Cost (£k)	00 /01	01 /02	02 /03	03 /04	04 /05	FUTURE	AGENCY OFFICER
14.1 Otters Support the Notts. and Yorks. Otters and Rivers Projects to carry out surveys of otter distribution; identify and undertake habitat enhancement requirements		Environment Agency WT	EN RO LA FWAG	5	1	1	1	1	1		Valerie Holt
14.2 Water Voles Survey Water Vole populations on main rivers and undertake site management plans on all outstanding Agency owned land		Environment Agency		5	1	1	1	1	1		Valerie Holt
14.3 Freshwater white clawed crayfish Collect survey information to assess population distribution in the Idle & Torne area		Environment Agency		R			●	●			Peter Sibley
14.4 Daubenton's Bats Install bat boxes at suitable locations including on the network of pumping stations in Hatfield Chase		Environment Agency IDB	EN WT LA FWAG	5	1	1	1	1	1		Valerie Holt
14.5 Barn Owls Work with the Hawk & Owl trust to install nest boxes and improve habitat and buffer zones		Environment Agency H&TO	WT RO LA FWAG	R	●	●	●	●	●		Valerie Holt
14.6 Invertebrates Investigate distribution within potential habitat and maintain and enhance population of scarce species		Environment Agency EN	WT	U				●	●		Peter Sibley
14.7 Native brown trout Determine the genetic diversity of brown trout by assessing past stocking levels/extent and undertake genetic analysis	 	Environment Agency		5		5					Steve Chambers
14.8 Invasive plants Control the growth of Australian Stonecrop on North Level Engine Drain; survey and monitor growth of bankside invasive plants		Environment Agency	WT EN MAFF RO IDB LA FWAG	2	1	1					Valerie Holt

Issue 15: Lack of habitat diversity in the Idle & Torne catchment

4

Objective – To improve the existing landscape and ecology in the Idle & Torne catchment

During the 1970s and 1980s, capital flood defence schemes were undertaken on the River Idle and the River Torne. As a result the lower reaches of the River Torne and parts of the River Idle have floodbanks set away from the river channel and very little tree cover. Although some tree planting has improved the landscape, the lack of physical diversity has had a detrimental affect on both river's ecosystems. Plant communities, fish populations, other wildlife and landscape features have all been affected.




Some wetlands have been created on the River Torne to improve habitat but there is still a lack of wetlands in the area.

The Magnesian Limestone area to the west of the Idle & Torne area is important for grassland, scrub and wetlands.



River Torne

Actions

ACTIONS	THEME	RESPONSIBILITY LEAD OTHER	Total Cost (£k)	00 /01	01 /02	02 /03	03 /04	04 /05	FUTURE	AGENCY OFFICER
15.1 Undertake rehabilitation of River Idle and a feasibility study of River Torne		Environment Agency RO	31	31						Valerie Holt
15.2 Develop strategies for Idle & Torne to identify activities and actions to improve their conservation value		Environment Agency	R	●						Valerie Holt
15.3 Ensure that habitats connected with the Magnesian Limestone area are protected and enhanced through partnership projects		Environment Agency WT EN LA RO	R	●	●	●	●	●	●	Valerie Holt

Issue 16: Fly-tipping, litter and aesthetic pollution

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Objective – To assess the reasons why fly-tipping appears to be on the increase and how to prevent it

Litter, unauthorised tipping and other forms of aesthetic pollution often detract from our enjoyment of the natural environment. The cost for clearing up fly-tipped material is the responsibility of the landowner, but if the deposit has occurred on public land then the local authority has a duty to remove the waste. Fly-tipping can cause significant environmental problems. If offenders

are identified, the Environment Agency will take enforcement action against them, which can vary from a written warning, to prosecution in the Crown Court with a potential penalty of up five years imprisonment and/or an unlimited fine.

The Agency will seek to reduce litter and unauthorised tipping by working with local groups to increase awareness through education initiatives targeting households and businesses. A fly-tipping stakeholder forum has developed a co-ordinated approach and a protocol has been agreed between the Local Government Association and the Environment Agency.

ACTIONS	THEME	RESPONSIBILITY LEAD	OTHER	Total Cost (£k)	00 /01	01 /02	02 /03	03 /04	04 /05	FUTURE	AGENCY OFFICER
16.1 Support local initiatives in clearing littered areas, as well as LS and Tidy Britain Group projects. In addition, promote education of public to highlight problems of litter		Environment Agency	TBG LA RO NFU	R	●	●	●	●	●		Chris Deakin
16.2 Raise awareness by posting information notices at problem sites		Environment Agency	TBG LA NFU	2		1	1				Chris Deakin
16.3 Liaise with Local Authorities and others to implement protocol on fly-tipping		Environment Agency LA	Police	R	●	●	●	●	●		Chris Deakin


Issue 17: Landspreading of waste

Objective – To ensure that the practice of spreading industrial waste onto land is carried out in a way and in locations that will provide agricultural benefit but not adversely affect the environment

Industrial wastes can be spread onto agricultural land as fertilisers. The practice is regulated by the Agency under the Waste Management Licensing Regulations, which allow the activity to be exempt under certain conditions. Landspreading is subject to immediate prior notification to the Agency, and there is a requirement that the waste should be of agricultural benefit.

Numerous landspreading operations take place in the Idle & Torne area, particularly in Blaxton and Aukley where food processing and abattoir wastes are spread onto agricultural land.

If good practice is not followed, certain constituents of the waste, normally beneficial to the land, can adversely affect fauna and flora. Pollutants such as heavy metals can enter the food chain through cattle grazing and crops. Also, if the waste is not spread appropriately, ponding of the effluent can lead to waterlogging of the land, polluting run-off to watercourses and leaching to groundwater.

ACTIONS	THEME	RESPONSIBILITY LEAD	OTHER	Total Cost (£k)	00 /01	01 /02	02 /03	03 /04	04 /05	FUTURE	AGENCY OFFICER
17.1 Investigate appropriateness of regulations for landspreading of waste in the Idle & Torne area		Environment Agency	NFU	U	●	●	●	●	●		Chris Deakin



Issue 18: The extent of floodplains are not clearly defined

Objective – Provide accurate definition of floodplain extent and prevent development encroaching into the floodplain

The Agency does not have any direct powers to prevent development in floodplains, but in our role as statutory consultee of Local Planning Authorities (LPAs) we are usually successful in objecting to any proposed development in floodplains. In order to do this effectively it is necessary to have an accurate definition of the extent of the

floodplain. However, the extent of the floodplains is not currently mapped for the main rivers within the Idle & Torne area.

The Environment Agency produced a complete set of Flood Risk Maps in 1999 and each Local Planning Authority were provided with a CD-ROM for their own use. This information is the best currently available from all sources, but the Agency will update these Indicative Floodplain Maps this year (2000). It is intended that this information will be made available on the Internet by the end of 2000.

ACTIONS	THEME	RESPONSIBILITY LEAD	OTHER	Total Cost (£k)	00 /01	01 /02	02 /03	03 /04	04 /05	FUTURE	AGENCY OFFICER
18.1 Define the extent of floodplain in the LEAP area		Environment Agency		300		300					Roy Ladhams
18.2 Provide improved floodplain maps to the LPAs		Environment Agency	LPA	300		300					Roy Ladhams

5. Protection through partnership



5.1 Partnerships

The Agency is well placed to influence many of the activities impacting on the environment through its own operations, using the Environment Act 1995 and other legislation. However, achieving environmental improvements often depends on the co-operation of other organisations. For example, the Memorandum of Understanding between the Agency and the Local Government Association sets out how we will work with local authorities to protect and improve the environment. It seeks to establish a framework to promote better integration of our work and ensure the best use of public resources. The Agency is involved in a number of joint initiatives with local authorities and other groups.

5.1.1 Local agenda 21

Agenda 21 is a global action plan for the 21st century that was produced at the Rio Earth Summit in 1992. Local authorities across the world were seen as the focus for promoting and encouraging local community action and were charged with producing a Local Agenda 21 (LA21). The Environment Agency supports LA21 groups and projects by providing information, expertise and support where possible.

All the local authorities in the Idle & Torne area are involved in the LA21 process and most have produced or are producing action plans. Some local authorities are linking their LA21 work to the Community Plan and Best Value process.

5.1.2 Waste minimisation

The key objective for a more sustainable waste strategy is to minimise the amount of waste that is produced, make best use of the waste that is produced and to minimise the pollution from waste.

The Producer Responsibility Obligations (Packaging Waste) Regulations 1997 place an obligation on certain businesses to recover and recycle specific amounts of packaging waste. Area offices are capable of responding to queries from local businesses and provide advice and information. We are also promoting waste minimisation through Waste Minimisation Clubs, our own activities and by partnership with local groups. In addition there will be promotion of best practice in waste management and special waste regulations.

5.1.3 Water company asset management plans

Major improvements have been made to the quality of our rivers in the last 10 years. Since the privatisation of the water utilities large sums of money have been spent on upgrading sewage treatment works. Improvements to these and the sewerage systems are prioritised in the water companies' Asset Management Plans (AMP). New investment schemes are included in the third Asset Management Plan (AMP3) to run from 2000-2005. This has been prepared by the Government and the Agency, in consultation with the water companies, for approval by OFWAT and represents an investment in the order of £6.5 billion nationally.

In the Midlands Region the figure for spending by the water companies will be approximately £0.8 billion. In the Idle & Torne area Issues 3 and 8 highlight the work that is to be carried out as part of the AMP process.

5.1.4 Other partnerships

Agency partnerships in the Idle & Torne area were referred to in detail in the consultation report. They include:

- Working with regulated businesses to improve the environment through Integrated Pollution Control Improvement Programmes
- Working with Wildlife Trusts, Farming and Wildlife Advisory Groups, local authorities and others on conservation and recreation collaborative projects

5.2 Education

There is a need for a greater level of environmental education by the Agency and a need to raise awareness of environmental issues. It is essential to the delivery of a cleaner more sustainable environment in the long term. In many cases a lack of information and awareness is one of the factors which leads to environmental damage or neglect, and we need to encourage ownership and responsibility for the local environment.



The Agency's EnviroBus 2000

The production of this LEAP is one step towards increasing the accessibility of information about our local environment. The Agency has a wide range of leaflets and publications, which are available from our customer contact team at the Area office. Information is also available on our web site. The web site also provides links to other sources of environmental information.

5.3 Land Use/ Planning Guidance

Land use is one of the most important influences on the environment. The location of activities can have both positive and negative effects.

Redevelopment and renewal of urban and waste land can do much to repair the damage of the past, while appropriate control over new development can protect sensitive habitats, the variety of wildlife and can minimise or prevent increased emissions of pollution to air, land and water.

Land use planning is the responsibility of the county, district and unitary planning authorities, and the control of land use change is through the Town and Country Planning Acts and Government Planning Guidance. The Agency is committed to maintaining close working relationships with the local planning authorities to ensure effective links between planning and environmental protection.

LEAPs are non-statutory documents. Regional Planning Guidance makes reference to the need for local authorities to take into account Catchment Management Plans (the forerunner to LEAPs), developed by one of our predecessor bodies the National Rivers Authority, and to integrate policies that take into account the effects of land use on the water environment. It is hoped that future Regional Planning Guidance will take into account the Agency's broader remit.

General Enquiry line –	0845 933 3111
Lower Trent Area Office –	0115 945 5722
Internet World Wide Web –	www.environment-agency.gov.uk
E-mail messages –	enquiries@environment-agency.gov.uk
Floodline –	0845 988 1188

Emergency Hotline
0800 80 70 60
open 24 hours a day

(to report any incidents involving water, land and air)

6.0 Future review and monitoring

The Agency will be jointly responsible, with other identified organisations, 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 is due at the end of October 2001.

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

- Examine the need to update the LEAP in the light of changes in the Idle & Torne area
- 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 LEAP
- Roll forward the detailed actions

Appendix one

LIST OF ORGANISATIONS AND INDIVIDUALS WHO MADE RESPONSES TO THE CONSULTATION DRAFT

Bassetlaw District Council
Mr Mackintosh, Huggin Farm
Council for the Protection of Rural England
Mr Noel Simpson
English Nature – East Midlands
National Farmers Union – East Midlands Region
Derbyshire County Angling Club
Newark and Sherwood District Council
Derbyshire Wildlife Trust
Nottinghamshire Wildlife Trust
Ministry of Agriculture, Fisheries and Food
R C Scholl
Farming and Wildlife Advisory Group
Ramblers Association – Doncaster Group
Doncaster Naturalists Society
RMC Aggregates (UK) Limited
English Heritage
Rotherham Metropolitan Borough Council
Doncaster Metropolitan Borough Council
Sustrans – Lincoln
Friends of the Earth – Bassetlaw
The Hawk and Owl Trust
British Canoe Union – Nottingham
The Inland Waterways Association – John Bayliss
Chesterfield Canal Trust Limited
The Inland Waterways Association – Neil Edwards
Groundwork – Newark and Sherwood
Tickhill Countryside Group
Hanson Aggregates
University of Sheffield
Lafarge Redland Aggregates
Waltonian Angling Club Limited
Mansfield District Council
Yorkshire Water Services Limited
Maltby Environmental Group
Yorkshire Wildlife Trust

In addition to those listed above, two questionnaires were returned anonymously.

Appendix two

ISSUES AND ACTIONS REMOVED FROM THE LEAP SINCE THE CONSULTATION DRAFT

REFERENCE IN CONSULTATION DRAFT	REMOVED ACTION	RESPONSIBILITY	REASON
1.4	Develop water resources model for Isle of Axholme catchment.	Agency	The model has been completed but is not designed to assess the impact on water quality. It has been agreed by Agency officers to remove this action from Issue 1.
2.1	Study the effects of letting River Trent water into the Warping Drain.	Agency	Report indicated that let-back to the drain was not causing any major problems and the recommendation is that, subject to agreed operational procedures, the time-limited licences can be extended.
2.2	Produce a WLMP for the River Idle between Bawtry and West Stockwith.	Agency EN / IDB RO / LA	The Water Level Management Plan has been produced and the recommendations will be implemented as necessary.
2.3	Produce a Licensing Policy on the renewal of abstraction licences.	Agency	The report indicated that let-back to Warping Drain was not causing a problem so, subject to agreed operational procedures, the time-limited licences can be extended. It is unlikely that the Agency will receive any new abstraction applications but if we do then they would be considered.
2.4	Improve resources model of system draining to Keadby.	Agency Birmingham University	A data collection project was run during 1998 and 1999 from which a computer model of the system was produced by the end of spring 2000. The computer model has since been run under a number of different 'what-if' scenarios to assess the likely impact of increased levels of abstraction above the volumes currently licensed. This modelling has given a clear indication that the issue of new or increased abstraction licences in the Isle of Axholme would increase the risk of environmental damage, structural damage of the drain walls, and impact upon existing abstractors ability to take water for irrigation.
2.5	Produce WLMP for Hatfield Chase drainage system.	Agency / IDB MAFF / CA / EN	The WLMP was produced in March 2000.
2.6	Draw up and implement a new licensing policy for surface water abstraction.	Agency	Following the modelling study referred to above it has been determined that the area must be closed to new or increased abstraction licences. It is also necessary to ensure that the current system of licence level restrictions, which allows the Agency to stop certain abstractors at times of low water levels, is enforced in future with reference to clear prescribed water levels at key locations.
3.1	Pumped borehole discharge to Vicar Water/Pond. Some streambed and pool lining.	N&SDC Agency	The groundwater was assessed as being suitable for use in the augmentation of Vicar Water and Vicar Pond. The level of contamination that was initially suspected was not encountered and an abstraction licence has been issued. Also, Vicar Water and Vicar Pond have been lined using colliery spoil made available during landscaping so that the loss of water to the ground from the watercourses is greatly reduced. This work will minimise the amount of groundwater needed for augmentation. Ecological survey work has been undertaken at the site and the Agency was involved in protection of fish stocks in Vicar Pond during the lining works. The refurbished country park is now open to the public.

REFERENCE IN CONSULTATION DRAFT	REMOVED ACTION	RESPONSIBILITY	REASON
3.2	Seek the views of the local community, EN, Notts CC, regarding a flow augmentation scheme for Rainworth Lake.	Agency EN NCC RSPB NWT	A feasibility study carried out by SRK Ltd was completed in February 2000 and it showed that there are no public concerns regarding low flows in Rainworth Water downstream of Rainworth Lake SSSI.
4.3	Detailed geo-physical surveys to be undertaken across both Moors to determine degree of hydraulic continuity between the superficial deposits and the underlying Sherwood Sandstones.	Agency WT RSPB THMCF	The detailed geophysical survey was successfully carried out during the summer of 1999 and an initial interpretation of the subsurface geology submitted in March 2000 by the consultants IMC. See Action 4.4.
5.1	Ensure that measures are taken to comply with conditions in the licence and Section 158 Agreement.	Agency STW Ltd	This issue and associated action is being dealt with as part of the Water Resources sections' routine work.
8.3	Establish a plan for future development sewage and effluent disposal facilities.	Agency LA	Since 1996 the problem issues with regard to inadequate foul drainage from cross connections at various industrial estates have been addressed and eliminated.
8.4	Establish a plan for oil and chemical storage handling facilities.	Agency LA	The pollution problems associated with the Hellaby and North Anston industrial estates are due to the concentration of oil pollutants from surface water run-off which drains via a balancing pond to finally discharge into a watercourse. This 'build-up' of oils produces a noticeable iridescence, which in turn leads to public complaints. This problem will always exist and does not affect water quality in the receiving watercourses.
9.2	Obtain statutory Water Quality Objective (WQO) status.	DETR	The Rivers Ecosystem objectives applied to watercourses have been used by DETR as the targets to be obtained within watercourses. They have used them in the AMP3 process and have asked the water companies to spend around £6billion nationally in order to comply with these targets. Therefore to some degree they can be considered to be statutory objectives without the actual legislation associated with more formal designation.
10.1	Assess the feasibility of developing additional water resources.	Agency NFU CLA	This issue and associated action is being dealt with as part of the Water Resources sections' routine work. Within the English Rural Development Plan there are grants being made available by MAFF to help abstractors.
11.1	Develop and continue liaison arrangements with MPAs to take into account the need to protect the broad water environment when considering planning applications (during quarrying and restoration phases).	Agency MPA AC	This issue and associated actions are being dealt with as part of the Water Resources sections' routine work.
11.2	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.	Agency	See 11.1 above.

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REFERENCE IN CONSULTATION DRAFT	REMOVED ACTION	RESPONSIBILITY	REASON
12.4	Promote recreational use and provision of facilities through discussion of interested parties.	LA Agency TDFG	This action is being dealt with as part of the Conservation sections' routine work.
15.1	Model and monitor impacts of qualifying discharges (both chemical and biological).	Agency	Idle & Torne SIMCAT (Simulated Catchment) model has been developed. This is a mathematical model, which allows assessments to be undertaken of the effects of improved effluent quality. This action is now complete.
17.2	Promote agricultural environment grant scheme.	OP / Agency MAFF / RO	This action is being dealt with as part of the Conservation sections' routine work.
17.3	Encourage shrub cover on banks by sensitive river management.	Agency RO	This action is being dealt with as part of the Conservation sections' routine work.
17.4	Evaluate riparian management to improve vole habitats.	Agency RO	This action is being dealt with as part of the Conservation sections' routine work.
17.5	Survey Idle catchment to assess vole population.	Agency	Now incorporated in action 14.2
17.8	Construct new bat nursery at Dirtness P.S.	Agency EN	With the help of the local police wildlife liaison officer and licensed bat workers, the Agency designed and built a bat box, the design of which was approved by English Nature, comprising of three 'woodcrete' bat boxes and a series of wooden vanes.
17.16	Survey and monitor watercourses known to have rare or scarce species.	EN Agency IDB	Now incorporated in action 14.8
17.17	Undertake programme of translocation of rare species.	IDB Agency	Now incorporated in action 14.8
17.18	Investigate the creation of wetland areas, especially on the Upper Torne, to encourage reed bed development.	LA Agency EN MAFF	Now incorporated in action 14.8
18.2	Work with partners to assess ecological value. Plan and undertake enhancement works where appropriate e.g. Torne wetland.	Agency CA LA DWT	This action is being dealt with as part of the Conservation sections' routine work.
18.4	Promote agri-environmental schemes to encourage change in management of waterside habitat.	Agency CA	This action is being dealt with as part of the Conservation sections' routine work.
18.5	Ensure that restoration of gravel workings includes habitats as per BAP targets.	LA Agency RO / GC	This action is being dealt with as part of the Conservation sections' routine work.

Appendix three

ENVIRONMENT AGENCY LEAFLETS AND INFORMATION

Listed below is a selection of leaflets available from the Environment Agency. It is intended as a guide to the type of information available rather than as a complete list, as new leaflets are being produced. It does not include policy documents or technical reports.

General Information

- A Guide to Information Available to the Public
- Guardians of the Environment
- 0800 Leaflet (Emergency Hotline)
- Customer Charter
- Corporate Plan Summary
- Complaint and Commendation Procedure
- World Wide Web – Agency site information
- An Environmental Strategy for the Millennium and Beyond
- Partnerships in Environment Protection
- Recruitment Information

Education

- Activity Fun Book
- The Living Water
- Green Shoots
- Animal Mask

Water Quality / Pollution Prevention

- Blue Green Algae
- Identifying Freshwater Life
- 'How to Avoid' Pollution Series:
 - River Pollution Home Pollution
 - Silt Pollution Farm Pollution
 - Silage Pollution Solvent Pollution
 - Chemical Pollution
- Making the Right Connection – Avoiding Water Pollution
- Designs that Prevent Pollution – Nature's Way – sustainable urban drainage (video)
- Farm Waste Management Plans
- Farm Waste Regulations
- The Oil Care Code (various)
- Pollution Prevention Guidelines
- Building a Cleaner Future, including video and poster
- Water Pollution Incidents in England and Wales – Report Summary
- Recovering the Cost of Pollution

- Accreditation Scheme for Spill Response Contractors
- Discharge to Controlled Water Annual Charges
- Assessing Water Quality
- The Use of Licenses to prevent pollution
- A Guide to Groundwater Vulnerability Maps
- Managing Maize
- Masonry Bunds for Oil Storage Tanks
- Pollution Prevention Pays

Integrated Pollution Control / Radioactive Substances

- Integrated Pollution Control Fees and Charges
- Charging Scheme for Radioactive Substances Act Regulation
- Radioactive devices must be registered with the Environment Agency
- Best Practicable Environmental Option Assessment
- Integrated Pollution Control and You

Waste

- What a Waste!
- Special Waste Regulations 1996 – How they affect you
- Classification of Special Waste
- Use of the Consignment Note
- Obtaining and Sending Consignment Notes
- Waste Regulation and You
- The Registration of Waste Carriers
- New Packaging Regulations – How do they affect you
- Clinical Waste
- Duty of Care
- Producer Responsibility Obligations 1997
- Producer Responsibility Obligations (Packaging Waste) Regulations 1997
- The Agency's Contribution to Sustainable Development Waste Minimisation

Appendices



Regional and Area Facts

- Midlands Region Map
- Area Maps and Fact Sheets
 - Upper Severn
 - Lower Severn
 - Upper Trent
 - Lower Trent
- Our Midlands Environment
- Severn Bore and Trent Aegir
- Environmental Issues in the Midlands

Fisheries Conservation and Recreation

- Anglers and the Agency
- Rivers and Wetlands – Best Practice Guidelines
- Buyer Beware – Your Guide to Stocking Fish
- Fisheries News
- Understanding Buffer Strips
- Control of Invasive Plants near Watercourses
- Restoration of Salmon on the River Trent
- Have Fun, Have a Care (Water Recreation Information)
- Recreation Sites (Midlands Region)
- Enjoy your Garden – Care for our Environment
- Rod Fishing Bylaws
- The Severn Way
- Phytophthora Disease of Alder

Flood Defence and Water Resources

- Abstraction Licensing and Water Resources
- Defying the Disaster: Memories of the 1947 floods
- Flood Defence Fact Sheet
- Flood Warning Information: what to do if your property is at risk
- Land Drainage Bylaws
- Living on the Edge – a guide for riverside owners
- Making the most of your Spray Irrigation Abstraction Licence
- Policy Regarding Culverts
- River Works
- Safeguard the Environment: A Guide for Developers
- Saving Water – on the right track
- Schedule of Main Rivers
- Spray Irrigation

- Water Abstraction Charges
- Water Alert
- Waterwise – are you pouring money down the drain?

Please contact the Customer Contact Team at the Lower Trent area office for further information and to obtain these and other leaflets (subject to stock availability).

Internal Distribution List for LEAPs (08/01/2001)

Name	Job Title	Location	Quantity
Regional Management Team			
David King	Regional Director	Sapphire	1
Brian Waters	Regional Water Manager	Sapphire	1
Andrew Skinner	Regional Environmental Protection Manager	Olton Court	1
Bob Branson	Regional Finance & Corporate Services Manager	Sapphire	1
Barbara Yates	Regional Planning & Corporate Affairs Manager	Sapphire	1
Andrew Wood	Lower Trent Area Manager	Trentside	1
Philip Burns	Upper Trent Area Manager	Fradley	1
Bill Forbes	Lower Severn Area Manager	Tewkesbury	1
Steve Morley	Upper Severn Area Manager	Shrewsbury	1
		TOTAL	9
Regional Environmental Protection Team			
Sue Stocks	Regional Water Quality Manager	Olton Court	1
Dave Foster	Regional Scientist	Olton Court	1
Chris Thomas	Regional Groundwater & Contaminated Land Mgr	Olton Court	1
Bob Harris	Regional Groundwater & Contaminated Land Mgr	Olton Court	1
Tony Gubby	Regional Waste Regulation Manager	Olton Court	1
John Collins	Regional PIR/RSR Manager	Olton Court	1
Jo Jefferies	National Research & Development	Olton Court	1
Regina Duggan	EP Business Planner	Olton Court	1
Helena Tompkins	EP Technical Support Manager	Olton Court	1
Vaughan Birbeck	National Library & Information Services Manager	Olton Court	1
		TOTAL	10
Regional Water Management Team			
John Fitzsimons	Regional Flood Defence Manager	Sapphire	1
Martin Stark	Regional FER & Navigation Manager	Sapphire	1
Paul Crockett	Regional Water Resources Manager	Sapphire	1
Norman Edginton	Regional Capital Works Manager	Sapphire	1
Alex Minshull	Regional Environmental Management Advisor	Tewkesbury	1
Phil Hickley	Head of Coarse Fisheries Centre	Hoo Farm	1
		TOTAL	6
Regional Planning & Corporate Affairs Team			
Chris Blakeley	Regional Technical Planning Manager	Sapphire	1
David Throup	Regional Liaison Manager	Sapphire	1
Colin Berghouse	Regional Business Development Manager	Sapphire	1
Jenny Stratton	Regional PR & Communications Manager	Sapphire	1
<i>Tony Ball</i>	<i>Regional Committees Services</i>	<i>Sapphire</i>	<i>1¹</i>
<i>John Cowdrey</i>	<i>Information Officer</i>	<i>Sapphire</i>	<i>30</i>
		TOTAL	35
Regional Finance & Corporate Affairs			
Clive Moy	Regional Estates Manager	Sapphire	1
Richard Mains-Smith	Regional Corporate Planning Manager	Sapphire	1
		TOTAL	2
Head Office			
Barbara Young	Chief Executive	Rio House	1
Archie Robertson	Director of Operations	Rio House	1
Roger Vallance	Head of Local Government Liaison	Rio House	1
		TOTAL	3
Others			
Pete Grigorey	Regional LEAP Planner (South-West)	Exeter	1
Vacant	Regional Technical Planner	Sapphire	1
Julie Vince	Publishing Officer	Sapphire	1
Antony Lancaster	Team Leader – LEAPs	Fradley	1
Jennie Comerford	Team Leader – LEAPs & Partnerships	Shrewsbury	1
Tom Black	Team Leader – LEAPs	Tewkesbury	1
		TOTAL	5
COMBINED TOTAL			70

¹ Send one with note about which AEG members will have already received one. Tony will ask for more copies if there is a demand.

memo



**ENVIRONMENT
AGENCY**

To See attached list

Our ref jf/memo/idle&torne/ap

From James Freeborough

Your ref

Ext. Number 3620

Date 08 January 2001

IDLE & TORNE LOCAL ENVIRONMENT AGENCY PLAN

Please find enclosed your copy of the Idle & Torne Local Environment Agency Plan (LEAP). I apologise for the delay in getting this document to you.

This plan outlines the Agency's commitment, in partnership with others, to environmental improvement within the Idle & Torne plan area over the next five years.

I would very much like to hear any views, comments or ideas you may have on this action plan and especially whether you can help to deliver any of the actions listed.

The next stage of the Idle & Torne LEAP process is the production of the First Annual Review due to be published in October 2001. A copy of this document will automatically be sent to you unless you request otherwise.

Regards

JAMES FREEBOROUGH
Team Leader - LEAPs

Enc.

Appendix four

Glossary

Abstraction

The removal of water from any source, either permanently or temporarily.

Abstraction Licence

Licence issued by the Environment Agency under section 38 of the Water Resources Act 1991 to permit removal of water from a source of supply.

Agenda 21

A comprehensive programme of worldwide action to achieve a more sustainable pattern of development for the next century. UK Government adopted the declaration at the UN Conference on Environment and Development (the Earth Summit) held in Rio de Janeiro in 1992.

Aquatic

Pertaining to the water environment.

Aquifer

A water bearing-stratum situated below ground level. The water contained in aquifers is known as groundwater.

Asset Management Plan (AMP)

Water Companies' Strategic Business Plans – initiated by OFWAT as part of the periodic review of water company charges. Sets out investment priorities for water resources, sewerage improvement and sewage treatment. We are now in the third review (AMP3) which will cover the period 2000 to 2005.

Augment

The addition of water by artificial input. Usually to 'top up' low flows in summer by either groundwater pumping or via reservoir release.

Base flow

The flow of a river derived from groundwater sources.

Biochemical Oxygen Demand (BOD)

A standard test which measures over 5 days the amount of oxygen taken up by aerobic bacteria to oxidise organic (and some inorganic) matter.

Biodiversity

Diversity of animal and plant life.

Borehole

Well sunk into a water bearing rock.

Buffer zone

Strip of land 10-100m wide, alongside rivers which is removed from intensive agricultural use and managed to provide appropriate habitat types.

Catchment

The total area from which a single river system collects surface run-off.

Coarse fish

Freshwater fish other than salmon and trout.

Cyprinid fish

Coarse fish belonging to the carp family, e.g. Roach, Dace and Bream.

Dissolved Oxygen

The amount of oxygen dissolved in water.

EC Directive

A type of legislation issued by the European Commission of the European Union which is binding on Member States in terms of the results to be achieved but which leaves to Member States the choice of methods.

Effluent

Liquid waste from industry, agriculture or sewage treatment plants.

Eutrophication

Excess growth of aquatic vegetation due to increased nutrients being introduced to the watercourse.

Fauna/Flora

Animal life / Plant life.

Floodplain

This includes all land adjacent to a watercourse over which water flows or would flow but for flood defences in times of flood.

Groundwater

Water, which saturates a porous soil or rock substratum (or aquifer). Water held in storage below ground level.

Groundwater units

Administrative sub-divisions of aquifers, defined on geological and hydrological criteria, which form the basis for groundwater resource management and licensing policy decisions.

Heavy Metals

A loose term covering potentially toxic metals used in industrial processes, common ones include chromium, copper, lead, zinc and cadmium.

Herbicide

Any agent, either organic or inorganic, used to kill vegetation.



Integrated Pollution Control (IPC)

An approach to pollution control in the UK, which takes account of potential effects upon all environmental media. Applies to processes authorised under Part A of the Environmental Protection Act 1990.

Integrated Pollution Prevention and Control (IPPC)

Aims to prevent or reduce emissions to air, water and land including measures concerning waste. Protection of the environment as a whole.

Invertebrate fauna

Animals which lack a vertebral column – used for biological classification.

Landfill

Site used for waste disposal into/onto land.

Leachate

Liquor formed by the act of leaching.

Main River

The watercourse shown on the statutory 'main river maps' held by the Environment Agency and MAFF. The Agency has permissive powers to carry out works of maintenance and improvement on these rivers.

Nitrate Vulnerable Zone (NVZ)

An area where nitrate concentrations in water exceed, or are at risk of exceeding the limit of 50 mg/l laid down in the 1991 EC Nitrate Directive.

Nitrogen dioxide (NO₂), Nitric Oxide (NO), Oxides of Nitrogen (NO_x)

NO₂ and NO are both oxides of nitrogen (NO_x) produced by traffic and industry. NO₂ can have an adverse effect on human health, increasing the symptoms associated with respiratory illness. NO₂ is a target pollutant in the UK National Air Quality Strategy.

Ordinary watercourse

A watercourse that does not form part of a Main River.

Particulate

Small particles of matter released from a number of sources, which can affect the respiratory and cardiovascular systems. A target pollutant in the UK National Air Quality Strategy. PM₁₀ particles below 10µm.

Renewable Energy

Energy produced from resources, which are unlimited, or rapidly replenished e.g. wind, water, sunlight, wave power or waste.

Riparian Landowner

Owner of land adjacent to the river.

River Corridor

The continuous area of river, riverbanks and immediately adjacent land alongside a river and its tributaries.

River Ecosystem (RE)

Classification used to measure water quality, see RQO definition below.

River Quality Objectives (RQO)

Water quality targets to secure specific formal minimum quality standards for specific stretches of water by given dates. A component of these was introduced by "The Surface Waters (River Ecosystem Classification) Regulations 1994".

Sewage

Liquid waste from cities, towns and villages which is normally collected and conveyed in sewers for treatment and/or discharge to the environment.

Sewerage

Means of conveying foul or surface water.

Sherwood Sandstone

A thick sequence of poorly cemented red-brown sandstones with interbedded marls and conglomerates deposited during the Triassic era, constituting one of the main aquifers in the British Isles.

Site of Special Scientific Interest (SSSI)

A site given a statutory designation by English Nature or the Countryside Council for Wales because it is particularly important, on account of its nature conservation value.

Sulphur Dioxide (SO₂)

A gas which dissolves in water to give an acidic solution. It is an irritant when inhaled and may cause breathing difficulties. Emissions of SO₂ can lead to acid rain, affecting ecosystems and water quality. A target pollutant in the UK National Air Quality Strategy.

Surface Water

Water collecting on and running off the surface of the ground.

Sustainable Development

Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Transfer Station

Waste disposal facility where waste is collected prior to transport to final disposal point.

Water Table

Top surface of the saturated zone within the aquifer.

Winter storage reservoir

Reservoirs built by farmers to store water during the winter months when it is "plentiful" for re-use during the summer.

CONTACTS:

THE ENVIRONMENT AGENCY HEAD OFFICE

Rio House, Waterside Drive, Aztec West, Almondsbury, Bristol BS32 4UD.
Tel: 01454 624 400 Fax: 01454 624 409

www.environment-agency.gov.uk

www.environment-agency.wales.gov.uk

ENVIRONMENT AGENCY REGIONAL OFFICES

ANGLIAN

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Tel: 01733 371 811
Fax: 01733 231 840

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Guildbourne House
Chatsworth Road
Worthing
West Sussex BN11 1LD
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Fax: 01903 821 832

MIDLANDS

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550 Streetsbrook Road
Solihull B91 1QT
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Fax: 0121 711 5824

SOUTH WEST

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Exeter EX2 7LQ
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Fax: 01392 444 238

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Leeds LS1 2QG
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Fax: 0113 246 1889

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Fax: 0118 950 0388

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WALES

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St Mellons Business Park
St Mellons
Cardiff CF3 0EY
Tel: 029 2077 0088
Fax: 029 2079 8555



ENVIRONMENT AGENCY GENERAL ENQUIRY LINE

0845 933 3111

ENVIRONMENT AGENCY FLOOD LINE


0845 988 1188

ENVIRONMENT AGENCY EMERGENCY HOTLINE

0800 80 70 60



**ENVIRONMENT
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