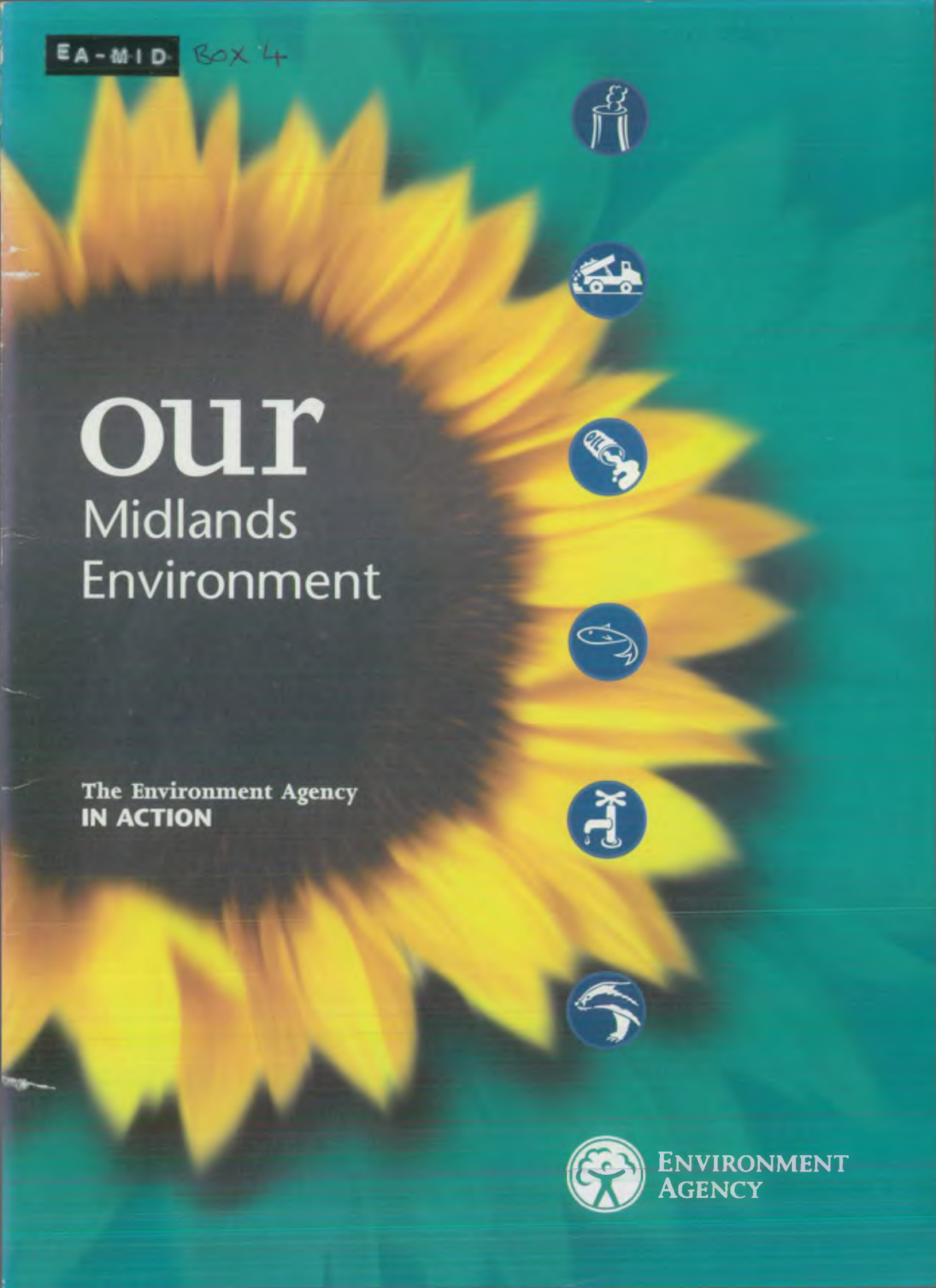

our Midlands Environment

The Environment Agency
IN ACTION

ENVIRONMENT AGENCY

Contents

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our Midlands Environment

The environment remains high on the national agenda. The main focus over the next 25 years will be toward climate change, water management and pollution prevention. The Agency will have a major role in contributing to these policy areas in fulfilling its duty to encourage sustainable development. Their regulation will present many challenges to the Agency's management and staff. The Agency is confident that with foresight and the best use of available resources, the challenge of maintaining the correct balance between regulation and negotiation in environmental protection, can be met. This report deals with the Agency's current work and discusses areas for development; some of these will need resourcing.

This report to the Regional Environment Protection Committee (REPAC) is prepared by the Midlands region and looks at the impact of current national and international policies, legislation and pending directives on the work of the Agency in the areas of Process Industry Regulation, Waste Regulation, Contaminated Land, Water Quality, Water Resources and Conservation. It includes a summary and a technical section for each topic area.

The REPAC was established by the Environment Act 1995. It advises the Agency on this work whilst representing the interests of the public and other regulatory organisations. This committee meets in public at three-monthly intervals and receives reports on environmental issues in the Midlands. The Midlands region has two other statutory committees: the Regional Flood Defence Committee and the Regional Fisheries Advisory Committee. These groups receive reports on matters relating to their own functional interests.

Over the next few years developments in regulation will include a Europe-wide system of Integrated Pollution Prevention and Control. Under this regime new polluting processes including intensive agriculture will be regulated for the first time. Factories where major safety and environmental hazards exist will be regulated under the new COMAH Directive.

The management and regulation of controlled waste ensures that its environmental impact is reduced to a minimum. The financial and environmental costs of producing and discarding waste are significant. The Agency believes it is better not to produce waste in the first place and much of its current work is geared toward waste minimisation or the prevention of waste. A full survey of industrial and commercial waste producers is planned with the results available in 1998.

The Agency plays a key role in regenerating derelict and contaminated land in England and Wales. Its National Groundwater and Contaminated Land Centre is in the Midlands region.

The Agency will direct programmes to harness the opportunity presented by the regeneration of brownfield sites and the protection of groundwater. The Agency supports the use of best practice and consistent and sustainable approaches to assessment and remediation. It funds a substantial research programme on contaminated land, progressing the DETR's earlier work. The Agency develops best practice guidance to assist regulators and practitioners.

The Agency works to protect the quality of controlled water through the combined approach of legal powers and by negotiation with people or organisations who can affect the water environment. The control of pollution and the protection of water resources for drinking water supply or other use involves identifying and preventing potential sources of pollution and dealing with pollution incidents. Improvements to water quality will continue through to 2000 and beyond and will be enhanced by new investment schemes for sewers and sewage works in the region's water companies' Asset Management Plans.

The Agency's role in managing the region's water resources is to strike the right balance between the demands of all water users and the needs of the environment. The need for water is fundamental. The region is fortunate in generally having enough resources to meet its needs but one of the key tasks for us is to find ways to reduce the overall environmental impact of the use of water. The Agency intends to promote water conservation and efficiency and seeks to reduce leakage rates, all of which will help maintain a ready supply but also reduce the impact on the environment.

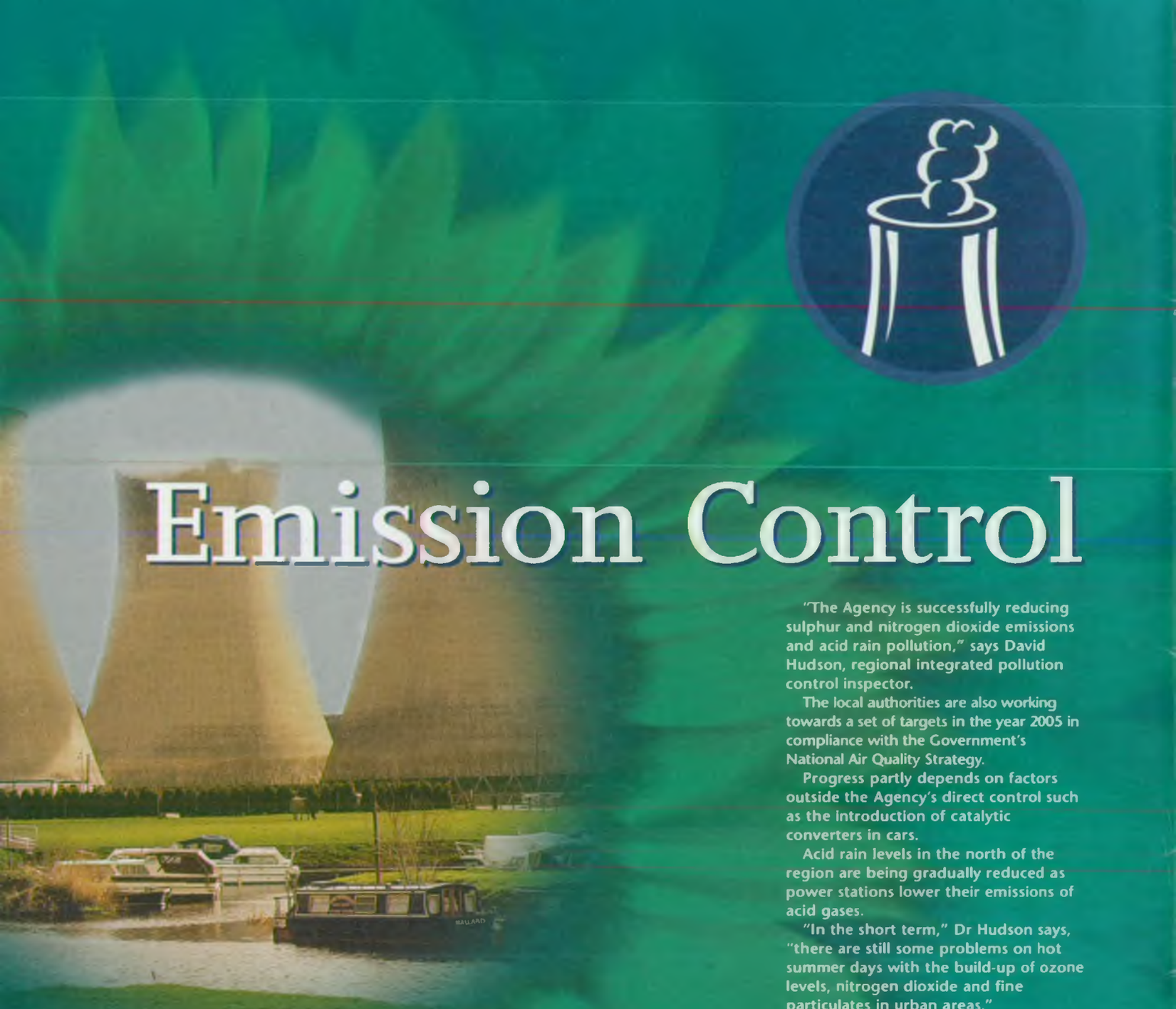
The Agency will take the opportunity to tackle areas of potential risk such as low river flows because of the high level of abstraction.

The new Government has announced its intention to undertake a fundamental review of water resources legislation. The Agency will be a principal adviser and will be seeking legal ways of tackling long-standing problems such as over-abstraction. The Agency will also be reviewing ways in which the ecology of our water-based environment can be better understood and thus protected.

In addition to its regulatory duties, the Agency must have regard to and in some instances further the conservation of the landscape and the cultural heritage. The pressures on the environment in this region are varied and the Agency is working in different ways to relieve them. Under the Habitats and Species Directive, sites of importance to nature conservation on a Europe-wide scale will be designated as Natura 2000.

The Agency will therefore have to vet any applications for authorisations, review all existing authorisations and examine its own operations which may affect such sites. This will form a significant area of work for the Agency in the coming years.

The Agency's information technology system – our geographical information system – will be used to correlate development plans for these diverse areas. Through this work and its operational programme integrated with Local Environment Agency Plans, the Agency will make a worthwhile contribution to sustainable development.



Emission Control

"The Agency is successfully reducing sulphur and nitrogen dioxide emissions and acid rain pollution," says David Hudson, regional integrated pollution control inspector.

The local authorities are also working towards a set of targets in the year 2005 in compliance with the Government's National Air Quality Strategy.

Progress partly depends on factors outside the Agency's direct control such as the introduction of catalytic converters in cars.

Acid rain levels in the north of the region are being gradually reduced as power stations lower their emissions of acid gases.

"In the short term," Dr Hudson says, "there are still some problems on hot summer days with the build-up of ozone levels, nitrogen dioxide and fine particulates in urban areas."

In March 1997 the limits on particulate levels were exceeded on 21 occasions, ozone levels on eight occasions and nitrogen dioxide levels on four occasions.

The Agency is helping local authorities to monitor air quality and is trying to raise public awareness about the causes of air pollution.

"With the aid of an air pollution protocol," Dr Hudson says, "the Agency is quantifying such episodes and attempting to identify their causes."

One of the main tasks now facing the Agency is to authorise, where necessary, the incineration of all cattle over 30 months old in the wake of the BSE outbreak.

Industrial process regulation
WHAT'S GOING ON

The Agency has reviewed trials of various options for disposing of the carcasses. These have included burning in special carcass incinerators and incineration in power stations. Historically carcasses have been buried in landfill sites.

Cattle over 30 months old are likely to be rendered down then burnt in power stations, while higher risk material such as brains, spinal columns and those animals diagnosed as diseased will be directly incinerated in special incinerators.

The Agency is responsible for regulating the biggest and potentially most polluting industries in the region. These include power stations or purpose-built incinerators, the chemical industry, steel works and cement works. As well as monitoring emissions from some 300 factories, the Agency regulates the disposal of radioactive substances from nuclear power stations and hospitals.

"One of the biggest challenges we face in the next five years," Dr Hudson says, "is to implement the European-wide system of Integrated Pollution Prevention and Control."

This could expand the number of factories the Agency is responsible for nationally from some 2,000 to about 8,000. It will also expand the range of activities monitored and how this is done.

Slaughterhouses, intensive pig breeding, poultry production, land filling and waste treatment are among the new industrial and agricultural processes.

In future the Agency will also be required to monitor noise, energy efficiency, recycling and the use of resources.

Often people are presented with conflicting results from which they have to try to make a decision

"The IPPC directive will mean we have to take a much more holistic look at the impact of a factory," Dr Hudson says, "from its design and operation through to decommissioning and land cleaning.

"A large proportion of the industrial pollution control in this country will be under the IPPC banner. It will include a much broader view of what industry is and we are expecting to see improvements.

"We see that as a challenge because it is a big job to go from where we are now with our UK legislation to something that is Europe-wide and therefore agreed with all our European partners. By the year 2007 we should have a system of common standards and practice applying across the whole of the European Union."

British industry, which is already regulated via the system of Integrated Pollution Control, should not have as many problems as some other European countries in adapting to the new regime.

"While the IPPC regime may create problems for some industrial processes, it will also solve environmental problems," Dr Hudson says. "That is a significant step forward and a major opportunity to review the things we have already done well."

Part of this European Union (EU) initiative is a new emphasis on designing plants in a way that minimises the production of waste in the first place.

The Agency is successfully reducing sulphur and nitrogen dioxide emissions and acid rain pollution

In future the public will want to get more user-friendly information about potentially polluting industries and processes more easily. This could include use of the Internet.

Another area where the Agency will have to develop its expertise is in guiding the public about health risks of potentially polluting industries. The alleged link between pollution and asthma, especially in children, is a case in point.

"We must try to win their confidence," says Dr Hudson. "Often people are presented with conflicting results from which they have to try to make a decision. Sometimes they can't manage without help. We increasingly have to help people make a judgement. It's a question of public trust."

Industrial process regulation
THE ISSUES

There has been a growing realisation that air pollution needs to be managed in a systematic way. The effects of different pollutants can be quite local or on a regional, national or global scale. For example, the so-called "greenhouse gases" are widely believed to contribute to the process of global warming. Rising temperatures could have serious consequences for agriculture or cause floods in coastal areas. Ground level ozone, mainly formed in the summer months, stems from complicated atmospheric chemistry fed by organic compounds such as those arising from industry and traffic. Sulphur dioxide from chemical and combustion sources can have local effects and is a component of so-called acid rain.

The Agency plays a key part in controlling air pollution from some of the largest and most potentially polluting factories in the process and other industries. However, with a complex issue of this nature, action by many authorities and groups is necessary.

NATIONAL AIR QUALITY STRATEGY

In 1997, the Government published the National Air Quality Strategy to develop a system for managing air quality towards a set of defined targets which are based on the best available advice from the medical and scientific community. The strategy requires local authorities to assess air quality against the target values and, where there are problems, to develop plans to meet those targets by 2005.

The local authorities will be able to use their existing powers under planning and development control, traffic management and directly in their regulation of industrial processes under Local Authority Air Pollution Control (LAAPC).

Developments in regulation in the next five years will include introducing the Europe-wide system of Integrated Pollution Prevention and Control. This system is due to be implemented in 1999-2007 and will involve a significant development of the British Integrated Pollution Control rules.

New polluting processes will be regulated for the first time, including intensive agriculture. In addition, many of the factories regulated under a number of other regimes will come under the new system.

Another European initiative is the COMAH directive (Control of Major Accidents and Hazards). This will succeed the "Seveso Directive" of 1982. Factories where major safety and environmental hazards exist will have to assess them and develop plans, in conjunction with the Agency and other regulatory bodies including the Health and Safety Executive, to prevent major accidents or to deal with emergencies when they arise. The Agency expects this development to form an important part of the relationship between environmental regulators and local planning authorities.

As part of the Agency's contribution to controlling air pollution, we have reviewed or placed restrictions on major industry for emissions of acid gases such as sulphur dioxide and the oxides of nitrogen. Large amounts of these gases are released by the electricity supply industry. As part of the 1996 review, the quantities that the industry is permitted to release have been cut considerably.

This follows the investigation of:

- the impact of emissions on the region's uplands;
- the upland's ability to absorb the material without harm.

Some of the biologically sensitive areas in the north of Derbyshire need particular attention. The permitted quantities of acid gases from power stations that affect those sensitive sites have been cut in line with that environmental need.

Changing Attitudes to Waste

A key goal for the Agency in future is to minimise the production of waste in the first place, so as to pre-empt any possible environmental pollution.

"We want to put a lot more effort into minimising waste production at source and pollution prevention," says Tony Gubby, regional waste strategy officer.

The impetus for waste minimisation comes from the EC framework directive on waste. This sets out a strategy for waste management and gives highest priority to minimising waste production.

The Agency will balance between the direct regulation of waste after it has been generated and influencing the production of waste in the first place.

"The Agency's waste regulatory duties are growing in the wake of new regulations governing the disposal of packaging and dangerous wastes and its duty to advise the Government on developing a national waste strategy," says Mr Gubby.

The Agency will not have the resources to fulfil all its regulatory duties in full. But it will have to promote a consistent regulatory approach while prioritising its main areas of activity to prevent environmental damage.

One of the Agency's roles is to promote best practice within industry and commerce, raising awareness of the causes of waste and its environmental effect.

Waste regulation
WHAT'S GOING ON

While many, but not all, large industries now have good environmental waste disposal practices, millions of small to medium sized enterprises (SMEs) do not.

The Agency is developing best practice for SMEs including a code of good environmental practice for waste minimisation and other initiatives, such as advice to the auto trade.

> We want to put a lot more effort into minimising waste production at source and pollution prevention

The Agency aims to help industry manage the wastes it produces in a better way. To this end, a Good Practice Guide was produced which has been sent out to hundreds of businesses in the country.

If the proposed EC landfill directive is adopted, it could phase out the co-disposal of liquid and solid wastes on the same site, ban landfilling liquid wastes and, most important, divert 75 per cent of municipal waste from landfill sites by 2010.

In Britain around 90 per cent of directive waste goes to landfill sites. In some other EU countries, more waste is incinerated.

"Treating the waste in a different way would cost money," Mr Gubby says, "and would generate a new set of issues, for example about what facilities are needed to replace landfill."

Another major influence on waste regulation in the region will be to incorporate the Integrated Pollution Prevention and Control Directive into national law.

The terms of reference of this Directive will apply to at least 30 per cent of currently licensed waste facilities. In future they will be monitored for noise, vibration, energy efficiency, recycling and use of resources.

The Producer Responsibility Obligations (Packaging Waste) Regulations 1997, which implement the EC Directive on Packaging and Packaging Waste, have been introduced this year.

Under the regulations at least 50 per cent of the UK's packaging waste must be re-used through recycling and other recovery methods by the year 2001.

One issue which will become more pressing in future is the difficulty of finding new sites for waste treatment and disposal. Public concern over these sites is so great that planning permissions are becoming harder to obtain. The trend is towards fewer but larger sites.

The snag, Mr Gubby says, is that fewer sites mean that waste has to travel farther. Larger sites can mean a bigger environmental impact in terms of traffic, access, noise and dust.

The problem of funding and allocating sites is essentially one for the local councils who have to allocate land for waste sites after taking advice from the Agency, and respond to planning applications.

> Treating the waste in a different way would cost money

Two years ago the Government introduced a landfill tax which means that for every tonne of waste disposed of in a landfill site, a £7 levy is paid to Customs and Excise. For every tonne of inert matter disposed of in this way, a £2 levy is raised.

Part of the idea behind this tax was to increase landfill costs so that producers and developers would consider other methods of waste treatment such as incineration, composting or recycling.

Although the Agency has no evidence to date that the amount of waste going to landfill sites has fallen as a result, some landfill operators are claiming the £2 levy has led to waste being diverted to other activities such as building golf courses, or constructing car parks and buildings.

The Agency, Mr Gubby says, will continue to monitor the effects the levy may have on the environment in terms of fly-tipping and the passage of waste to licensed facilities and exempt facilities.

Waste regulation
THE ISSUES

Waste regulation is big business for the Environment Agency, with 7,500 waste management licences to regulate and 400 new licences to process every year. Agency staff make 140,000 site inspections each year to ensure licence conditions are being met, and our area offices receive around 500,000 notifications from producers of the most harmful and dangerous waste under the Special Waste Regulations 1996.

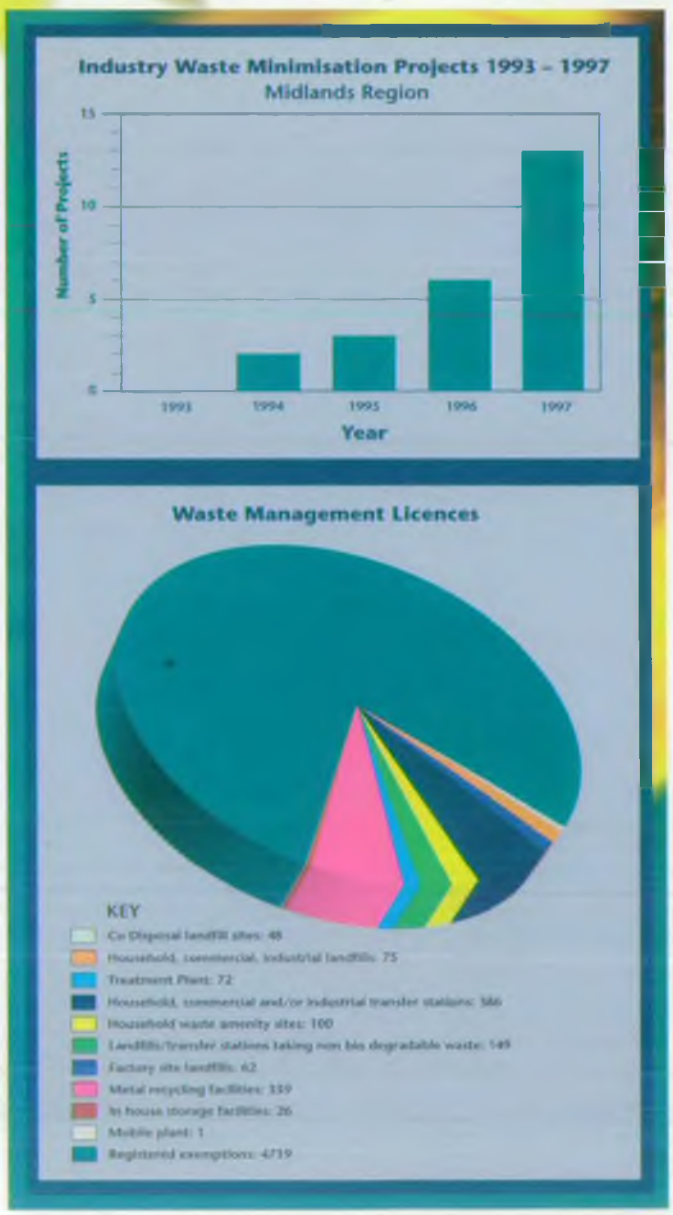
Our work is to regulate:

- the handling and managing of Directive waste, and its transport;
- the facilities that receive, keep, treat and dispose of this waste; and
- the people who manage the treatment and disposal facilities.

Waste is material that the producer no longer needs and intends to discard. It is produced by virtually every activity and, unless strictly controlled, it can become a serious health hazard and endanger the environment.

Around 28 million tonnes of Directive waste is generated in this region each year. Of this, a significant proportion is re-used or recovered and around 21 million tonnes is directed to treatment and disposal facilities.

Waste can have a local environmental impact when it is stored, hence the need for producers to use correct storage containers. The transport of waste has an obvious impact, hence the need to observe the principle that waste should be treated and disposed of as near as possible to where it is generated. The facilities which treat or dispose of waste can have a major impact on the local environment, so they can be seen as bad neighbours by those who live locally.



The management of waste suffers from the "not in my back yard" attitude. So, to avoid waste being taken miles from where it is produced, we advise local authorities to be regionally self-sufficient in allocating land for waste disposal.

Once land has a planning consent for waste treatment and disposal, activities on it are strictly regulated under environmental law to ensure that their environmental impact is minimal.

The cost of producing and discarding waste is significant, as is the cost of regulating it after it has been discarded. The environmental burden includes the effects of local storage, the effects of transporting it, and the need to allocate land – often in urban areas – for treatment and disposal.

To reduce these costs and effects, the Agency believes it is better not to produce the waste in the first place or at the least to minimise it. But in advocating this approach we ask waste producers to balance the alternatives, because the best environmental option may be to use different raw materials. Waste from these may have less impact on the environment. We are placing greater emphasis on waste minimisation and life cycle assessment and are reviewing the balance between the need to strictly regulate waste and to avoid waste so as to prevent pollution.

Existing Pressures

The Agency's main priority in regulating waste is to promote a consistent approach across England and Wales. In achieving this, the Agency will have to make consistent decisions and develop a structured framework for waste management licensing.

The main laws and regulations about waste are in place and are unlikely to change significantly in the near future. The Agency's main immediate task is to apply them consistently towards new waste management licences and the review of existing ones so that licences conform to the regulations.

The Midlands region determined 63 waste management licences during 1996/97 and modified 443. Currently there are 1,420 licences in force but not all the sites are operational. The Midlands region made over 22,000 inspections during 1996/97 to ensure that the licence conditions for these facilities were being met.

The Agency is responsible for implementing the Special Waste Regulations 1996 which came into force on 1 September 1996. The regulations say that producers of special waste – the most harmful and dangerous waste – must notify the Agency that it has been produced, when it is to be moved and where it is going. The Agency then monitors these movements to ensure that the waste is disposed of appropriately. The Midlands region has been involved with technical assessments of particular waste streams, legal interpretation of the regulations and the development of the special waste tracking system. The Department of Environment, Transport and the Regions (DETR) has recently revised the regulations in the light of Agency experience and it seems that in a number of areas, further essential changes may take place. During 1996/97 there were 127,000 special waste movements notified to the Midlands region, reflecting the nature of local industry and the facilities available here to receive such waste.

The Producer Responsibility Obligations (Packaging Waste) Regulations 1997, which implement the EC Directive on Packaging and Packaging Waste, have been introduced this year. Under the regulations at least 50 per cent of the UK's packaging waste must be re-used through recycling and other recovery methods by the year 2001. The regulations are complex and have added significantly to the workload of our area teams in terms of providing advice, helping with registration and data collection.

The Agency has a duty to advise the Secretary of State for Environment, Transport and the Regions on the national waste strategy. As a first step in the process, a pilot survey of industrial and commercial waste producers has been completed and Midlands staff visited or spoke to over 200 businesses. Subject to Government approval, we expect to begin a full survey of industry and commerce soon and make the results available as a database by the end of 1998.

The database will also be useful to industry and commerce, local government and the waste management sector. Government is expected to use it to establish a target for reducing wastes generated by this sector.

Our region has written a draft good practice guide on waste minimisation for industry and commerce. The guide has already been trialled at selected businesses during the pilot survey of industry and commerce. The guide will now be improved so that it can play a major role in a full national survey which will influence waste producers towards sustainable practices that will reduce waste at source.

The region has also initiated and managed a number of projects such as:

- registered exempt waste activities;
- registered waste carriers;
- public registers;
- updating a GIS database to identify waste facilities;
- survey of monitoring facilities in use at licenced facilities;
- preparing good practice guides for managing clinical waste;
- lead acid batteries.

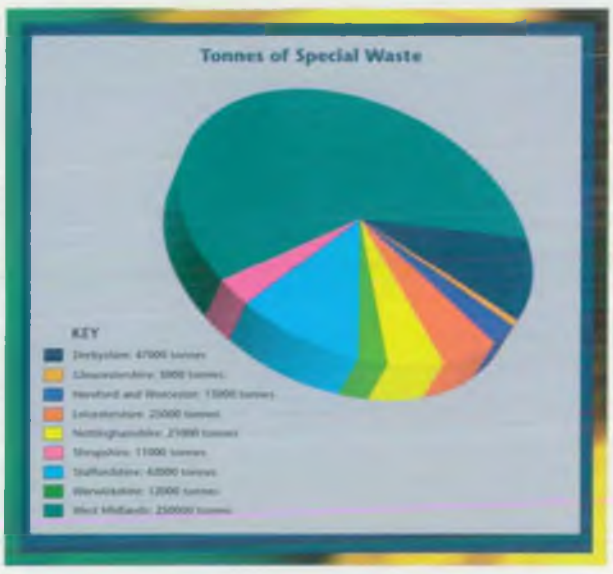
Forward Look

Being consistent within its licensing framework is a key objective for the Agency. Efforts to achieve consistency include a recently completed exercise to integrate functional activities, particularly at area level; this will enable us to target resources on priorities. The Agency has approval to increase the number of staff working on waste regulation. Those appointed will be trained to a sufficient level to meet the required demands. The Agency is unlikely to get all the resources it needs to perform its duties to an optimum standard, so it will continue to prioritise its waste regulation tasks.

A major influence on waste regulation will be the Integrated Pollution Prevention and Control (IPPC) Directive, adopted in 1996. Member states have until 30 October 1999 to turn the Directive into national law.

IPPC has a wider scope than integrated pollution control (IPC), waste management licensing – both functions being undertaken by the Environment Agency – and local authority air pollution control. The Directive will introduce an environmental philosophy backed up by law rather than a prescriptive regulatory system. It will emphasise pollution prevention at source. The Directive will require those being regulated:

- to take account of the environmental effects of noise and vibration;
- to consider energy efficiency, recycling and use of resources, decommissioning of plant, clean-up of contaminated land and accident prevention;
- to examine in depth the environmental implications of what they do.



Most IPC processes will be covered by IPPC, as will many other processes such as food processing, waste landfill sites and treatment plants, and intensive livestock farming. In total it is estimated that 8000 installations will be subject to IPPC, compared to around 2000 currently regulated under the IPC regulations. It is also estimated that at least 30 per cent of currently licensed waste facilities could fall within the terms of the Directive.

REGULATORS

The Directive allows for more than one regulator to operate IPPC for any given installation. The Agency will be the IPPC regulator for landfill and waste facilities and for those it already regulates under IPC. The Agency is considering coordinating other activities, such as noise pollution, with the other regulators.

The Agency now regulates applications of sewage sludge to agricultural land. With the ending of dumping at sea in December 1997, the Agency is identifying the Best Practicable Environmental Option (BPEO) for sewage sludge disposal. It is examining how it regulates land spreading.

Another major influence on waste regulation would be the proposed EC Landfill Directive if it were adopted in its present form. The proposals include the phasing out of the co-disposal of liquid and solid wastes in the same site and banning liquid wastes from landfill sites. In addition, 75 per cent of municipal waste would have to be diverted from landfill by 2010. The Agency is working with DETR on these issues.

Throughout its work, the Agency will be giving greater emphasis to preventing and reducing wastes at source, so as to minimise their environmental burden. The Agency will do this by promoting waste prevention techniques and working in partnership with others, including business and industry, with a view to setting and meeting agreed waste reduction targets.

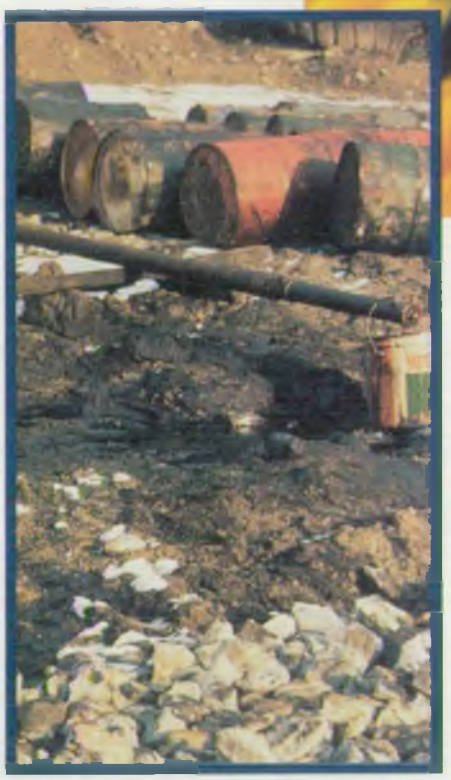
Legacy of the past

The Agency plays a key role in regenerating derelict and contaminated land in England and Wales, as part of its overall goal of contributing to sustainable development. Its principal aim, as set out in its contaminated land strategy, is to "secure, in co-operation with others, the remediation of contaminated land."

Chris Thomas, regional groundwater and contaminated land manager, says, "The main responsibility for identifying contaminated land and ensuring its clean-up lies with local authorities. But the Agency has a significant role to play and is establishing joint working relationships with local authorities to deliver this service. This includes providing advice and liaising with local authorities. The Agency also works closely with DETR and English Partnerships to exchange views on policy and practical issues of dealing with contaminated land."

The Agency will have the primary responsibility for 'Special Sites' the most seriously contaminated ones. The Environment Act 1995 outlines the local authorities' and the Agency's roles in managing contaminated land.

Contaminated land
WHAT'S GOING ON



We believe it is most important to work closely with both public and private sector organisations

Within the Midlands region there are various contaminated land sites. These include closed landfill sites, old gasworks and a wide range of industrial sites, many in environmentally sensitive locations. The role of landowners, industry and commerce in urban renewal is crucial to successful regeneration.

"We believe it is most important to work closely with both public and private sector organisations to encourage voluntary clean-ups where possible," said Ms Thomas. "The recycling of such land protects greenfield sites and provides land in urban areas for industry, commerce or housing."

The Agency has identified the need to clean up 50 seriously contaminated sites nationally in its corporate plan for 1997/8; the Midlands region's proportion of this target is 10; next year the national figure is likely to be 200 sites. Each year the Government makes £14 million in Supplementary Credit Approval available to local authorities and the Agency to investigate and clean up contaminated land and landfill gas problems.

The main responsibility for identifying contaminated land and ensuring its clean-up lies with local authorities

The Agency's National Groundwater and Contaminated Land Centre is located in the Midlands region. This centre will help operational staff to promote best practice and technical development in clean-up work.

Contaminated Land
THE ISSUES

Various potentially contaminated sites exist in the Region. They include closed landfills, old gasworks and a wide range of industrial sites, many near environmentally sensitive locations such as rivers and aquifers. This is for historical reasons: water has been needed in industrial processes, to transport raw materials and products, and to meet demand from centres of population.

As there are many types of contaminated land, our staff from various specialisms will need to get involved in the clean-up, as will local authority planning and environmental health staff.

At present many contaminated sites are cleaned up as part of a redevelopment. This requires planning permission for the final land use as well as the clean-up. We work closely with the developer to ensure that the clean-up minimises further risk to the environment. This may mean making a site investigation before the redevelopment, to establish the nature and extent of the contamination. We then discuss possible clean-up techniques with the developer. We may also get involved with work on contaminated sites that are still in use. Again, we aim to ensure a solution that minimises the risk to the environment.

The Agency's *Policy and Practice for the Protection of Groundwater* sets out the Agency's approach to contaminated land. The policies cover:

- our close working with local authorities;
- our ability and willingness to prosecute in certain circumstances;
- our approach in areas of widespread historical pollution;
- control of discharges; and
- the need to prevent new contaminated land being created.

Various techniques are available to clean up contaminated land. Traditionally, removing contaminated material to a licensed landfill site has been the most common, though it should only be done by a registered carrier who has a 'Duty of Care' under the Environmental Protection Act 1990. The Agency will consider all alternative technologies which can clean a site to an acceptable standard. If these methods are environmentally better than "disposal" the Agency will encourage their use.

This "suitable for use" principle arises from the Waste Management Licensing Regulations 1994, which allow developers to use soil to help clean up former industrial sites, and to construct, maintain and improve various facilities, without the need for a waste management licence. Local authorities and developers liaise with the Agency to ensure that any contamination within the soil is acceptable and will not harm the environment or endanger human health.

CLEAN-UP

If contaminated land is not subject to a planning application, but is affecting the quality of controlled waters, the Agency will encourage the polluter or owner to clean it up. If operators do not inform the Agency of such pollution occurring and we then detect it, we will consider prosecution or require remedial work. When cleaned up, contaminated land offers an opportunity for redevelopment. It is often preferable to redevelop a contaminated site with less contaminating end uses and therefore a lower threat of pollution to water resources.

Of the estimated 100,000 contaminated land sites in the UK, many will need some sort of clean-up to make them suitable for a specific use or to eliminate a specific significant hazard to human health, the environment, or buildings. Many are believed to be in the Midlands region. The Environmental Protection Act 1990 and the Environment Act 1995 give the Agency responsibility for, and a number of duties to manage, contaminated sites.

When the draft regulations and guidance associated with these Acts come into effect, local authorities will have the main responsibility for identifying contaminated land and ensuring its clean-up. The Agency will have a significant role in providing advice and acting as consultants to local authorities carrying out these duties. We will only have the primary role with the "Special Sites", as defined in the Guidance, which are the most seriously contaminated ones.

Local authorities and the Agency will be able to issue "Remediation Notices" requiring adequate clean-up of contaminated sites.

The General Development Procedures Order 1995 requires the local planning authority to consult with the Environment Agency on any planning application for development on or within 250 metres of land which:

"is or has at any time in the 30 years before the relevant application been used for the deposit of refuse or waste and has been notified to the local planning authority by the Waste Regulation Authority for the purposes of this provision."

The Agency must locate these old waste disposal sites and notify the planning authority.

Targets Set

In its corporate plan for 1997/98 the Agency has set a target to ensure that within the Midlands region it contributes to the clean-up of 10 seriously contaminated land sites this year. Of course our staff deal with many more sites than this on a daily basis.

The Government allocates money for Supplementary Credit Approval for contaminated land and landfill gas problems. Each year, the Agency and local authorities can bid for this money alone or jointly. This region has identified sites for future bids and will give high priority to making such bids. The money could be used for investigation and clean-up of sites where other money is not available or sufficient to solve the problem.

The new regulations and guidance are expected in the next year. Procedures and internal guidance, along with joint training with local authorities, will be arranged in the coming year.

Fit for Fish to Live in

Major improvements have been made to the quality of our rivers in the past seven years since the privatisation of the water utilities.

"The large sums of money spent on upgrading sewage treatment works have resulted in significant progress," Peter Whalley, regional water quality planner for the Midlands region, says.

There is still some way to go, however, and progress will ultimately depend on how much money the public is willing to spend on such work.

"We are currently negotiating sewage disposal and water quality improvement targets to be achieved by the year 2010 with Severn Trent Water Ltd," Mr Whalley says.

Sewer and sewage works improvement schemes will be included in the water service company's third asset management plan, AMP3, which is currently being discussed by OFWAT, the Government and the Agency.

"The quality of many of our rivers has been considerably improved. But several stretches of river and canal still contain poor quality water where fish populations are at serious risk," says Mr Whalley.

"We intend to improve these at least to the level where coarse fish populations can thrive in their waters."

Eventually the Agency hopes to upgrade the quality of all the region's rivers and canals.

Water quality
WHAT'S GOING ON

Mr Whalley says: "More environmental directives are likely to come from the European Commission. These will strongly influence how the Agency works to control water quality. The emphasis is likely to be on achieving high ecological quality as part of a concern for the environment as a whole."

The increasingly effective control of historical causes of pollution in the region, such as sewage and industrial effluent, has also made it easier to detect new "exotic" chemical pollutants – often present in minute amounts.

The Agency is devoting more time and thought to identifying and controlling these substances released into the environment in recent decades. They have subtle, long-term, biological and environmental effects.

"Sophisticated investigation techniques," he says, "are being deployed to detect the presence of oestrogen and other hormone-disrupting substances in water." These chemicals have been tentatively linked with male fish changing sex.

The Agency is also concerned about the presence of plant nutrients, such as nitrogen and phosphorus, and other complex agricultural chemicals in rivers and lakes.

Excessive nutrients in such waters can lead to eutrophication (uncontrolled plant growth) and the growth of toxic blue-green and other algae.

Such growth may affect the ecology of a river or a lake, disrupting the life of normal invertebrates and other animals.

The presence of excessive algal growth can make the water taste and smell musty, earthy or grassy. Toxic algae may poison animals that drink the water or affect people who swim in it.

> The quality of many of our rivers has been considerably improved

Eutrophication, Mr Whalley adds, also pushes up the cost of water treatment, inhibits water abstraction and reduces water's amenity value by preventing boating and fishing. If the climate becomes warmer, this will exacerbate the problem.

To control excessive plant and algal growth the Agency is enforcing EC directives governing waste water and is encouraging better farming practices to cut the amount of nitrate getting into the environment.

Recent dry summers have seen continuing problems with low flows in some rivers. These have diluted the rate at which sewage has been dispersed and led to deteriorating water quality.

POLLUTION

Urban pollution, where a river runs through an industrial area and is degraded by litter, dirty road and factory yard run-off water, is also a continuing problem.

It is being tackled directly by several Local Environment Agency Plans taking in stretches of the Tame, Erewash and Dove. Over the next five years, the Agency will encourage the use of a range of new techniques to get results. For example, the dirty water could be run off into ponds, or porous pavements could be introduced to absorb water into the ground.

> The next five years are likely to see some radical re-thinking

The Agency is keen to improve the aesthetic quality of urban streams, for example those running through local parks. But it only has limited powers to control the major problem of litter getting into urban rivers.

Effluent discharge.

"We can take action, for example, under flood defence law if litter is obstructing a river and causing flooding," Mr Whalley says.

"But we would like to work increasingly with local authorities who are responsible for such amenities and with organisations such as the Tidy Britain Group."

In future the Agency will tackle the key question of how to sustain the quality of water while protecting biodiversity more rigorously than in the past. The problem is how we use water resources in such a way as to sustain them for the benefit of future generations.

"The next five years are likely to see some radical re-thinking of how we approach our task of maintaining and sustaining water quality in the region," says Mr Whalley.

Water quality
THE ISSUES

Water plays a central role in human society. Our survival depends on having sufficient quantities of wholesome water to drink. Production of food from both fishing and farming relies on water supply. Many of our recreations and amenities depend on natural waters.

Water is intimately connected with the land as it passes to the sea and with the air when recycled as rain or snow. Its quality depends on what happens to it in the air and after its use on land. For example, it is affected in the air by acid gases, and on the land by the discharge of sewage, industrial effluents, waste disposal and its mingling with underground water and surface water.

Making sure that water is wholesome depends on controlling the effects of poisonous, noxious or polluting matter, solid waste and trade and sewage effluents. As the economy becomes more complex, the challenge to maintain water quality is critical to achieving sustainable development.

Water quality is protected and can be improved by:

- using legal powers such as the Water Resources Act 1991;
- negotiating with people and organisations who can affect the water environment. Our management of water quality concentrates on "controlled waters" – which include virtually all surface and groundwaters, estuaries and coastal waters apart from small ponds and reservoirs that are not connected to streams; and
- the active promotion of pollution prevention initiatives. Prevention is always better than cure.

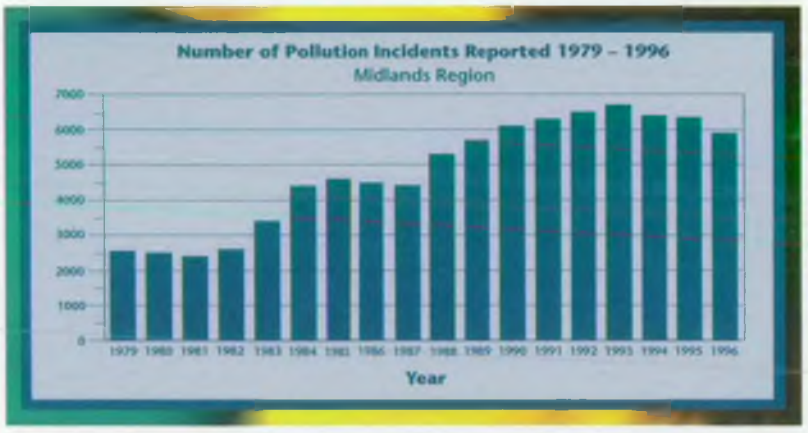


Fig. 1

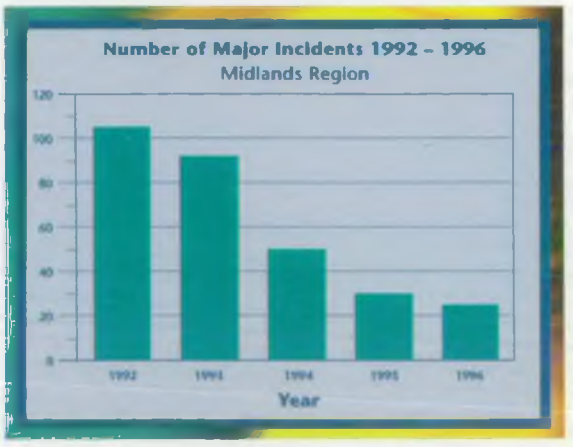


Fig. 2

Top: Joint work with emergency services prevents and reduces pollution problems.
Below: Oil and rubbish from towns causes serious pollution.

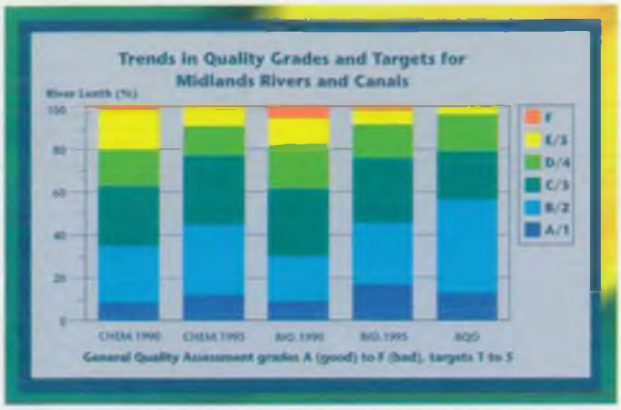


Fig. 3

Pressures

Midlands region has varied geography and climate. There are pristine uplands and industrial urban areas, with many kinds of land use in between. Agriculture is important to the local economy.

The main historical pressures on the environment have been to maintain clean water as demands for drinking water and agricultural supplies have increased; and to control pollution by the used water after treatment. Many discharges are to watercourses with low natural flows. Resources are mostly surface waters in the west and groundwater in the east of the region. There is considerable downward pressure on spending by water companies as customers demand lower bills.

Urban areas tend to degrade natural water in terms of its chemistry, the living creatures present, and how it looks and smells. In rural areas land use – particularly intensive agricultural production – poses problems of increased transport of sediment, plant nutrients and sophisticated agrochemicals in both surface and groundwater. An example is the disposal of sheep dip and the pesticides left on the fleece which will be released to the environment during wool processing.

More pervasive are the subtle, longer-term biological and environmental effects of the complex chemicals introduced into the environment in recent decades. For example, the oestrogen used in drugs manufacture, and the substances used in the plastics industry with hormone-like actions, are causing concern. The presence of these chemicals is being revealed by our investigations and by other people we work with.

The Agency has powers to control pollution from sewage and trade effluent by laying down and enforcing conditions under which potential pollutants are discharged. Protecting water resources for drinking water supply or other uses involves identifying and preventing potential sources of pollution and dealing with pollution incidents. There has been an increase in pollution incidents caused by road accidents at a time when the number of vehicles being used are continuing to rise. Figs 1 and 2 on page 16 show an increase in pollution incidents since the 1980s with a reduction in serious incidents in recent years.

It is more difficult to deal with urban pollution, which has many small individual sources acting to cause an overall problem. Similarly, problems with contaminated land and more diffuse sources – both urban and rural – require a joint approach between land owners, industrialists, local authorities and the Agency to make plans and raise money to attack long-standing problems. The Agency is actively promoting the adoption of Source Control or Best Management Practices as an effective way of addressing these issues. Throughout its work, the Agency has to consider the economic impact of environmental management.

Improvements

In this region, big improvements in water quality, both chemical and biological, since the early 90's stem from major capital spending expenditure by Severn Trent Water Ltd. Fig 3 shows improvements in the chemistry and biology of rivers and targets to be achieved. The work will continue until 2000.

New investment schemes for sewers and sewage works will be included in the water service companies' third asset management plan, which is being prepared for approval by OFWAT, the Government and the Agency.

This plan called AMP3, will run to 2010. If the complete programme were accepted by the Government, it would secure – at their river quality objective (RQO) level – up to a third of the length of those rivers and canals which we monitor and classify.

Modernisation of sewers and sewage works will help to secure clean rivers.

Some 87 stretches of river and canal with an RQO of River Ecosystem class RE5, which is a poor quality that puts fish populations at serious risk, will be considered for improvement to RE4 or better.

Fig 4 overleaf shows stretches of river that would be at risk of having poorer quality if there was no new investment in sewers and sewage works.

Urban pollution is being tackled in several Local Environment Action Plans such as Tame, Erewash and Dove. Work under these plans will trace unsatisfactory surface water drains and sewers and put right wrong connections of sewage or industrial waste to clean drains. In selected areas, there will also be work to investigate and test new techniques of controlling pollution at source such as from road runoff. If successful, the techniques will be gradually introduced via the local planning process and agreement with developers.

Getting to grips with urban pollution is difficult. Reducing waste at source requires close co-operation with local authorities and landowners, and education of the public. It is a long-term problem which should show some initial improvement over the five-year period.

Water quality
THE ISSUES

River polluted with litter.

TOXIC CONCERNS

Increasing concern about more toxic chemicals in water has been prompted by European law and a need to control pollution of the North Sea. Control and monitoring of toxic chemicals is covered by the EC Dangerous Substances Directive. We will be trying to locate, control and minimise the sources of these substances.

Our monitoring programmes will study herbicides, chlorinated solvents – which have caused pollution of groundwater in industrial areas – oestrogens and endocrine disruptor substances and other chemicals that pose a threat to the environment and public health.

Fig. 4

Waterways clogged by weed growth.

The Agency works with industrial companies to prevent pollution.

Excessive nutrients in rivers – leading to massive plant growth and the death of animal life – are tackled in the Agency Eutrophication Strategy. Control will be principally by the EC Urban Wastewater and EC Nitrate Directives, together with measures to encourage good agricultural practice. This should result in the decline of phosphorus and nitrogen levels in rivers.

The Agency will lobby Government to change the law to tackle long-standing problems such as pollution from water draining from abandoned mines. Our regulatory powers will be used decisively to obtain improvements from industry and agriculture. We will campaign against particular problems such as the wrong connection of foul sewage to storm drainage systems and to reduce road transport incidents.

The urban regeneration programme – URGENT – a partnership project between local authorities, industry, water companies, academic institutions and the Agency – aims to improve water quality and habitats in urban areas.

Several EC Directives are being turned into UK regulations, including those covering the taking of water for drinking and freshwater fisheries. A new Framework Directive, now passing through the EC law-making process, will affect fundamentally the way water quality and water resources are controlled in the EU. It will set objectives in terms of good ecological quality which will look at the environment as a whole. To complement this principle, the Agency will develop nationally and regionally a flexible system of quality objectives for controlled waters.

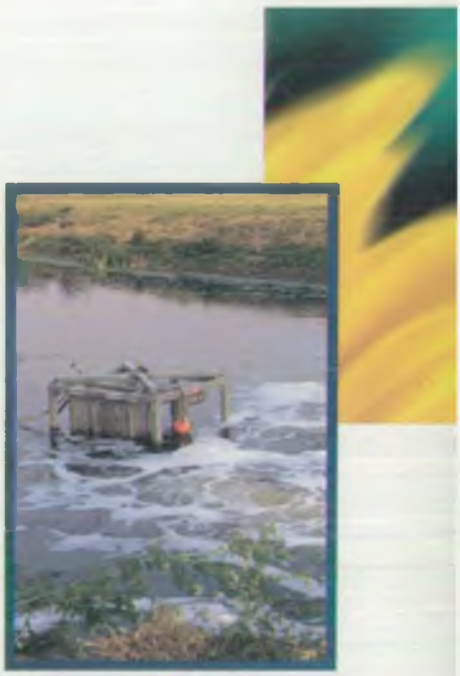
Looking to the future, the Agency will be involved in research to encourage interest in novel ways of assessing and controlling pollution. We will regularly report on water quality to representative bodies such as the Regional Environment Protection Advisory Committee and more widely to public bodies and others to encourage interest in our work.

Fish are good indicators of the health of our rivers and there have been encouraging improvements in the fisheries in many rivers like the Trent and for previously fishless rivers like the Stour and Erewash.

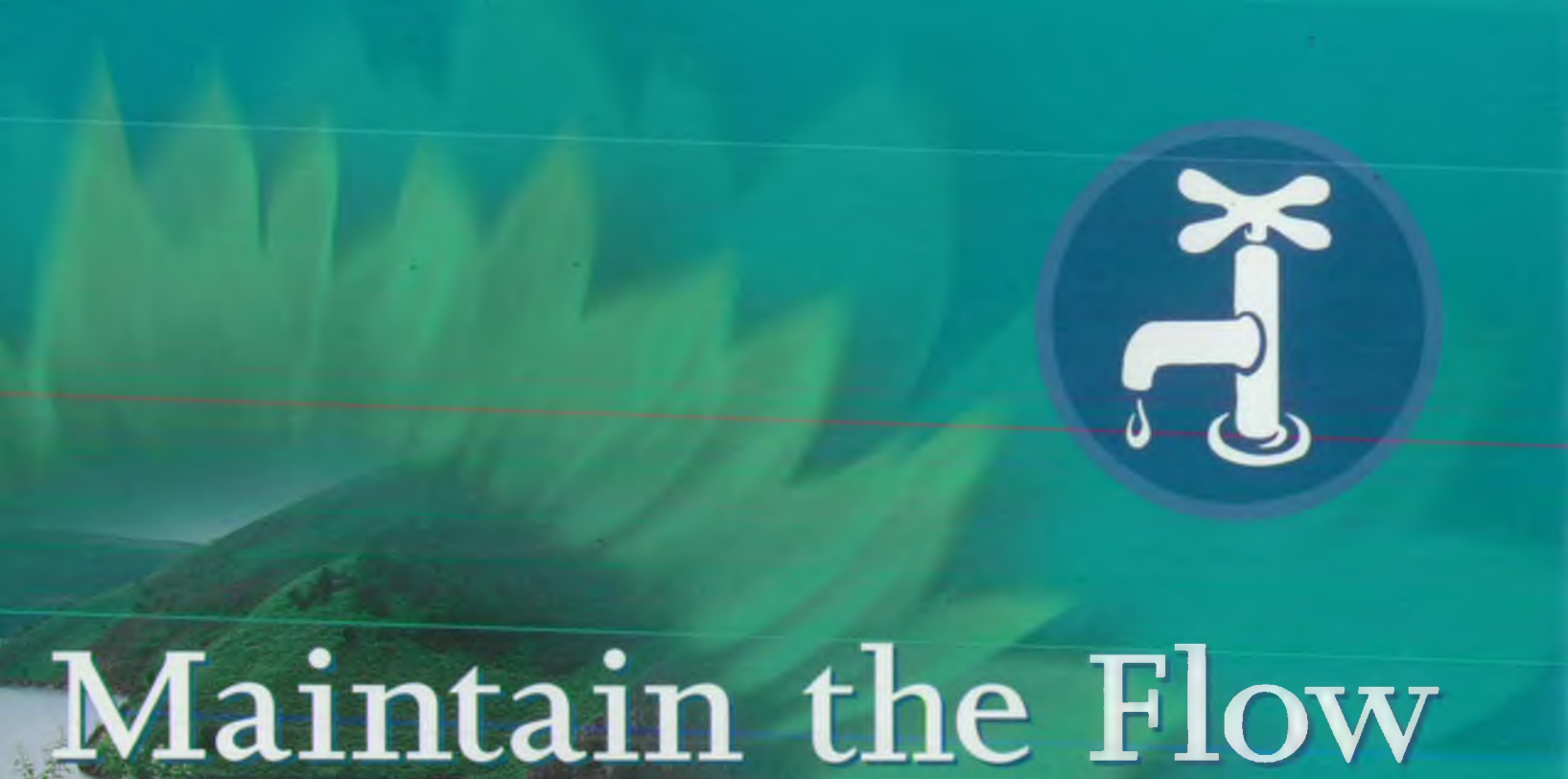
Despite the investment to date and the much improved water infrastructure, we still have not achieved long term sustainable solutions in a way that protects the water environment.

In some places water resources are being consumed faster than the supply can be replaced. Maintaining healthy river flows is essential to the natural ecological systems and water quality. This will not be secured unless further financial investment, particularly in urban areas, is forthcoming.

There are choices that need to be made about how we address these questions but there is no doubt about the need for this work. The Agency hopes that Government will support continued investment in the water improvement process in the Midlands. The decision is not when we will do this work but which bit we will do first. The decision is about quality and quantity and how sustainable we can be with our water management proposals.



Oxygenation of rivers to support fish life.



Maintain the Flow

The key to ensuring the long-term sustainability of water supplies in the Midlands region, Steve Morley, regional water resources manager says, is to conserve resources wherever possible.

If summers are becoming hotter and drier, he adds, the need to conserve water supplies will become even more acute.

The Agency, Mr Morley says, has a dual responsibility in managing water resources. On the one hand it must ensure that public water supply needs are met, but it must also minimise the impact of extracting and distributing water on the region's natural aquatic cycles and on the viability of its rivers and aquifers.

"One of the Agency's key weapons in conserving supplies," he says, "is to educate people to use less water and to use it more efficiently.

"The public should be encouraged, for example, to water their gardens sparingly and to use low water-intensive appliances."

Industrial and agricultural users, he says, also need to be persuaded to use water more efficiently.

Of the eight Agency regions in the country, the Midlands has the second highest demand from agriculture for spray irrigation. "This has a significant impact on river flows and the water taken is lost to the environment," Mr Morley says. "In the next few years we will try to persuade farmers to install more long-term, winter water storage capacity.

Water resources
WHAT'S GOING ON

"This will minimise the impact of abstraction (the taking of water) from rivers, causing reduced flows in summer. It will also benefit the farmers, who will have significantly more reliable water supplies. We are also concerned about farmers using trickle irrigation in water-stressed areas in the summer months.

"Often farmers resort to this form of irrigation in such areas having been refused licences for spray irrigation.

"But the use of trickle irrigation compounds the problems associated with water-stressed areas. We would like to see trickle irrigation licensed in future."

The Agency will continue to try to educate industry about the significant savings it can make by reducing the amount of dirty water discharged to sewers.

Most savings to industry do not come from using less clean water but from reducing the cost of effluent disposal.

The Agency will continue to promote the idea of water audits with companies that use large amounts of water to help them use less in industrial production.

One legacy of the region's industrial past is that for around 200 years some rivers and aquifers in the urban heartland have been over-exploited.

"The consequences of the past pose pressing problems today," says Mr Morley.

In Birmingham the loss of many industries in the 1960s has led to water tables rising back to their former levels as industrial abstraction has fallen.

Contaminants are now being drawn out into the region's rivers and rising groundwaters are threatening the city's Spaghetti Junction motorway intersection.

Of equally pressing concern, Mr Morley says, is excessive abstraction by companies and farmers who were given licences to draw water in the 1960s without regard to possible environmental effects.

Industry and agriculture also have a part to play in reducing their demands on the environment

Scarcely 20 miles away from Birmingham, over-abstraction of groundwaters is leading to rivers in Bromsgrove drying up.

A significant number of the region's wetlands, Sites of Special Scientific Interest – up to 20 – are at risk from over-abstraction. The Agency has already undertaken studies of the majority of sites to assess their vulnerability and will be continuing this work over the next few years.

In the early years of this century, boreholes were driven down to the aquifer beside the river Worfe in Shropshire to supply water to meet the growing needs of Wolverhampton.

Today, in summer, this leads to up to 8km of the higher reaches of the river drying out.

Mr Morley says there are up to a dozen rivers in the region whose flows are also severely affected by the historic and continuing high levels of abstraction for both domestic water supplies and irrigation.

Remedial measures, such as the Agency artificially increasing flows in a number of rivers, may help in the short term. But in the long term, the solution is to reduce abstractions and find alternative sources of water.

While the Agency is also negotiating with the various parties involved to reduce the water-take under these licences, the Government is considering giving it new powers to revoke such licences.

As part of the Government's Agenda for Action for future water planning, the Agency is reviewing together with water companies estimates of how much water is actually available in the region now, how much will be needed in future and what level of leakage is tolerable.

"We think this review – even without taking into account future climate change – will lead to a reduction in our estimates of how much water the region has available," Mr Morley says. "This will not, in our view, be a catastrophic reduction, but it will reinforce the need to conserve existing water resources.

SOLID TARGETS

"Negotiation will have to take place between the water companies, the Agency, OFWAT and the Government on how to further conserve resources."

On leakage Mr Morley says, "Water companies in the Midlands still have some way to go to minimise water loss. Some have already established solid targets and are making effective moves to achieving them.

"Industry and agriculture also have a part to play in reducing their demands on the environment by managing water better. But the biggest benefits would come from all of us looking critically at how we use water in our homes, bearing in mind the impacts on our rivers and wetlands."

Another major issue facing the Agency is the danger of nitrates from over-fertilised land leaking through the ground and fatally contaminating aquifers.

"In the next two to three years, up to 20 aquifers feeding local water company boreholes could be at risk," Mr Morley says.

The Agency's National Groundwater and Contaminated Land Centre is developing nitrate protection zones above and around threatened aquifers to reduce the amount of fertiliser farmers can spread in such areas.

Water resources
THE ISSUES

The Agency's statutory responsibility for water resources management is "to conserve, redistribute or otherwise augment water resources" and "to secure the proper use of these resources". In doing so, it also has to have specific regard to ensuring public water supply needs are met.

Our resources include rivers, reservoirs and aquifers. A system of licensing water abstractions from these sources is how we control the amount of water taken from the environment. The Agency's role is, however, much broader. In the licensing process itself, the Agency has to strike the right balance between the demands of all water users and the needs of the environment. Water users include not just those who want to take water such as industry, agriculture and the water utilities, but those who have other direct interests such as anglers and boaters.

The need for water is fundamental. But all water taken from the environment, even if returned later as effluent, must have some environmental impact. Minimising and even reducing that impact over time is the key to long-term sustainability; and it is central to the regional aims for water resource management.

In the past, people in the region have been fortunate in generally having enough water to meet their needs. Despite recent successive drought years, there has been little need to restrict consumer demand. The limited investment by farmers in long-term storage systems for spray irrigation does, however, continue to make agriculture more vulnerable to periods of reduced river and stream flows.

Resources from the River Severn system are a key element. The river has been developed as a regulated river since the 1960s and, supported by resources from Clywedog Reservoir and the Shropshire Groundwater Scheme, it allows over 2,000 Ml/day of abstractions to the Midlands and Bristol as well as directly for spray irrigation. The Trent river basin has historically been exploited less, except for reservoirs in the Dove and Derwent valleys, because of its lower quality. A scheme to use the Trent itself is under way and is likely to be a cornerstone of future strategy.

PUBLIC SUPPLY

In addition to river resources, the region has major aquifers, mainly Sherwood Sandstones. Water from these sources accounts for around 20 per cent of all water taken. Even more significant, they provide 40 per cent of the water used for general public supply. The ability to use the groundwater in conjunction with river-based resources is also useful in managing supply systems to reduce overall environmental impact. There are, however, some areas where historic over-use of groundwater has left a legacy of reduced river flow and threats to wetlands. These are examples where the current balance is wrong.

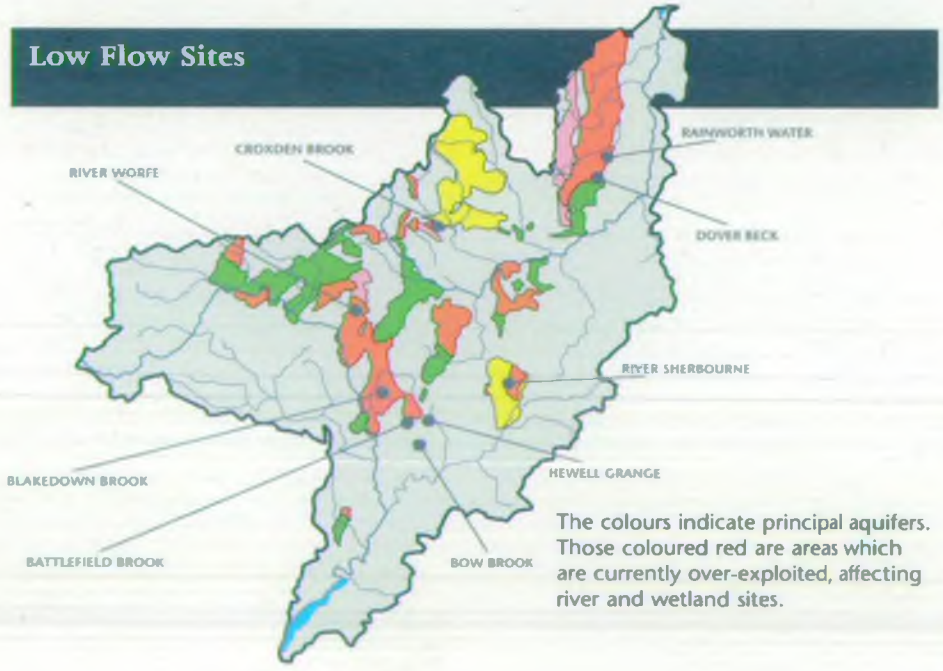
If the long-term aim is to minimise or reduce the impact of our water use on the environment, we must understand better the elements of future demands and therefore how to influence them. And we need a better understanding of the water-environment relationship and how to measure it. For example, should further development of the River Trent be allowed and, if so, how much water can be taken before the environmental impact is unacceptable?

PREVENTION

The development of techniques to help answer this question, both for the River Trent and generally, will be a key future activity. Understanding will improve but there will always be uncertainty, especially as timescales for environmental change can be very long. Prevention is better than cure and in this case prevention must ultimately mean minimising the need for the water in the first instance.

The water resource strategy is first to seek ways to keep water demands as low as possible in total terms and only then to meet those legitimate demands in the way that has least overall environmental impact. Water companies are the largest takers of water. Ensuring efficient use by them and their customers (you and me) will be key to any success. Also, gaining public support in accepting possible

Low Flow Sites



The colours indicate principal aquifers. Those coloured red are areas which are currently over-exploited, affecting river and wetland sites.

increased costs to achieve better environmental practice will be important. Addressing the current environmental problems has associated costs, which OFWAT, the financial regulator, will need to see justified.

Existing Pressures

Environmental damage caused by excessive abstraction is not always easy to identify or to measure. There are some areas in the region where existing resource development is clearly seen as causing environmental stress or damage. Predominantly, these are due to localised over abstractions of groundwater resources. The reason for this is largely historical and a result of the introduction of the first real water resources legislation in 1963. Abstractions existing at that time were licensed on actual use rather than on sustainable criteria. This had little regard for good aquifer or river management, concentrating on water supply needs. All groundwater abstraction will to some degree affect river and stream flows but in extreme cases this can manifest itself as river stretches that are completely dry for all, or part of, the year, as highlighted in the map on page 22. Headwaters of rivers are particularly likely to be vulnerable. We have identified and targeted for action those cases that are most acute and where there is best environmental gain to be had in improving the situation.

Action can include artificial boosting of flows. The Agency is implementing schemes to put water back into the Dover Beck in Nottinghamshire and the Blakedown Brook pools near Kidderminster. This follows similar successful approaches to alleviating low-flow problems in the Leomansley Brook through Lichfield and the Battlefield Brook through public parkland in Bromsgrove. To an extent, however, these are cosmetic interim solutions. The long-term solution is to reduce the abstractions that are causing the problems and to find alternative sources that are environmentally acceptable.

In other areas, current high levels of groundwater abstraction are causes of concern but as yet their environmental impact is less severe. It is important to investigate the potential risks to wetlands and river flows and we are working to achieve this.

The region also has many rivers that are heavily exploited, not just for public water supplies but for such uses as spray irrigation. Although only two per cent of the total licensed resources, abstractions for irrigation do have a major impact. They are at their greatest during critical, low-flow and drought periods. New licences are issued with conditions which restrict abstraction at specified flow thresholds. In some rivers, thresholds are now so high, to protect other abstractors, that new licences are of limited benefit to their holders.

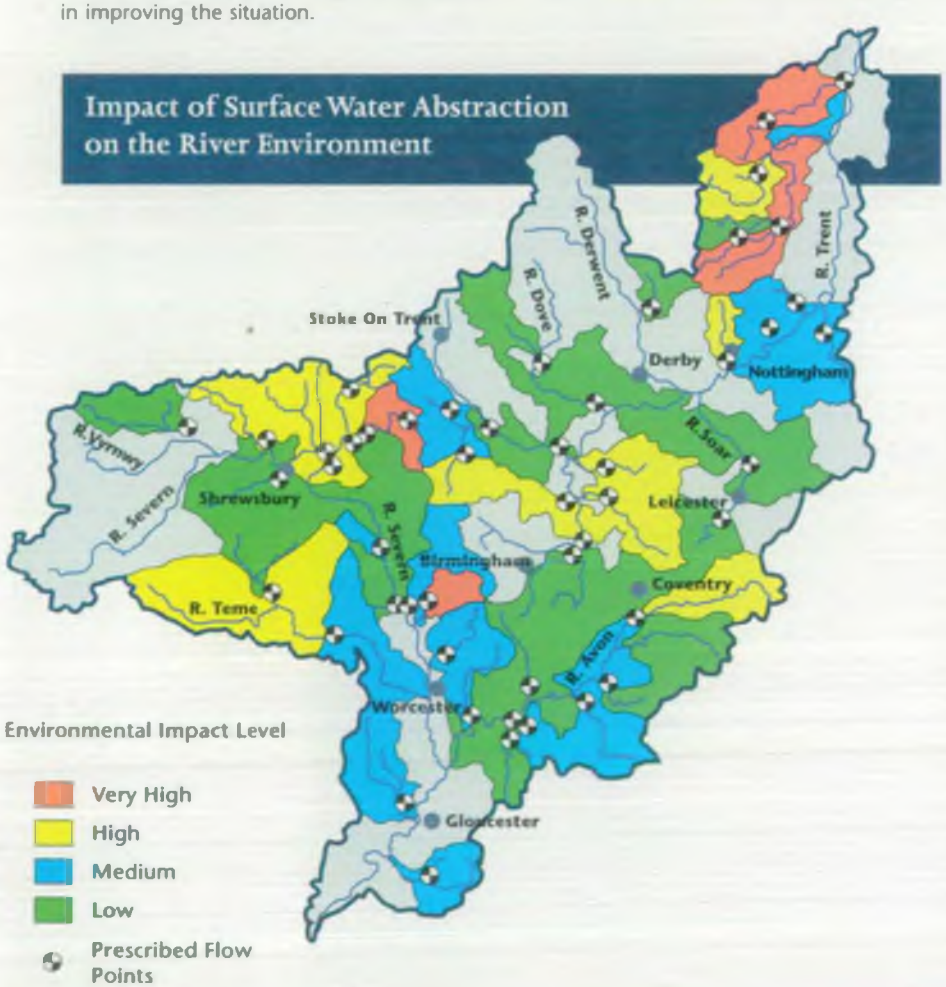
There must also be an environmental stress associated with the extended periods of reduced flow that result.

It is important to work with farmers to identify opportunities to change practices. We also need to review more scientifically the thresholds we have in place to test if they are still appropriate to meet today's environmental perspective. This work has started and will continue.

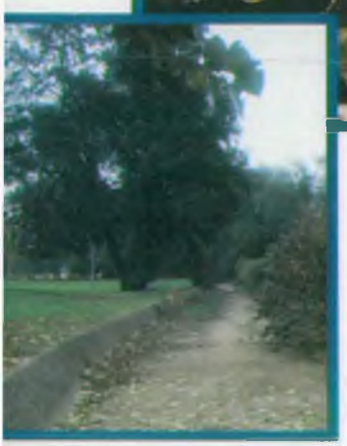
Recent drought years exposed some areas where we need to look more closely at the supply/demand balance. Drought orders which in effect reduced the amount of water left in the environment, in order to support public demands for water, were needed during the recent drought. Use of drought orders in this way can be reasonable, given the duty to have special regard to public water supply needs. They are a legitimate part of overall resource planning as a possible alternative to new resource development. It is important, however, to ensure that such orders are not often needed.

Canals

The canal density is particularly extensive in the Midlands, being the centre of the country's network. In effect it overlays the natural river system, taking water from it in one location and returning it elsewhere, sometimes outside the catchment. Demands for water to support locks tend to peak in the summer with increased holiday traffic; this coincides with periods of lowest flows in the rivers supporting them. Canals are also being used more as abstraction sources themselves, further increasing the demands on the rivers. The Agency has a number of studies ongoing jointly with British Waterways to see if local systems can be managed differently, to greater environmental benefit. Because of the central position, the potential use of the Midlands canals to convey water elsewhere to the country is an issue to monitor.



Water resources
THE ISSUES



Agenda for Action

Recent droughts have focused attention on water resources planning and issues. Government has tasked the industry with an 'Agenda for Action'. This includes establishing a common understanding about how much water is actually available, how much will be needed and what level of leakage it is legitimate to tolerate. The Agency has a role in auditing output from this exercise as well as taking the lead on it for the yield assessment of the River Severn system which it directly manages.

Early indications are that the exercise will result in a reduction of what was previously thought to be the amount of resources available. The implications for the supply/demand balance could be significant. If so, there will be pressure for development of new resources. Levels of service to the consumer will need to be balanced with levels of service to the environment, bringing in the issue of drought orders and their frequency. Forecast of demand for water supplies in the near future will be undertaken alongside the reassessment of resources. Key to the Agency's objectives will be ensuring that efforts to keep demands down are maintained. OFWAT has required water companies to produce plans for improving water conservation and efficiency. The Agency will be monitoring to ensure the plans continue to be delivered. In fact, much has been achieved recently to reduce leakage but it is important to maintain these improvements. The Agency expects that OFWAT will set mandatory leakage targets in the foreseeable future. The cost of the environmental impact of developing new resources, as the alternative to leakage control, should not underestimate the true cost and thereby underestimate the level of leakage it is economic to achieve. True economic costs will need to be developed and, in the meantime a precautionary approach taken to development.

Periodic Price Review

Against the background of the Agenda for Action work, OFWAT will prepare its next periodic review of water company price limits. This will establish prices and therefore the expenditure available for environmental improvement from the year 2000 onwards. Funding will be needed for the possible revocation of some licences if they affect sites under the Habitats Directive (see Healthy Habitats – Conservation). Funding will also be the key to tackling the problems of long-term groundwater mentioned earlier.

As these are mainly non-statutory targets for environmental improvement, the Agency will need to justify them in individual business cases, to show that the benefits justify the costs. The Agency will also be working to influence the development of water company business plans to ensure that they consider opportunities for tackling other areas of potential risk because of high levels of abstraction.

Legislation Review

The Government has announced its intention to undertake a fundamental review of water resources law, the first since 1963. The Agency will act as a principal adviser and expects that the licensing system will be changed. Specific targets for review are the Licences of Right issued in 1963, particularly where these have environmental drawbacks, and the compensation payments that currently apply to the forced revocation of licences. Also on the agenda are changes such as 'time limits' on licences that would otherwise be in force for ever, greater powers to demand data from major water users, and controls on the bulk transfers of water between companies.

The need to bring water used for trickle irrigation within licensing control is another subject of the review. This is a growing concern as irrigators in water-stressed areas often use the current exemption for this type of irrigation as a loophole when licences for spray irrigation would not be granted.

The timetable and therefore the immediate implications of the review are not yet clear, but it could take effect towards the end of the next five years.

Education

Much has been said about the need to keep increases in water demand down and to improve efficiency of water use. Water companies have a major role with consumers through delivery of water conservation and efficiency plans. Evidence from the recent drought, however, demonstrated a breakdown of trust between the public and the water companies. Influencing the wider public as well as industry will be a key task for the Agency.

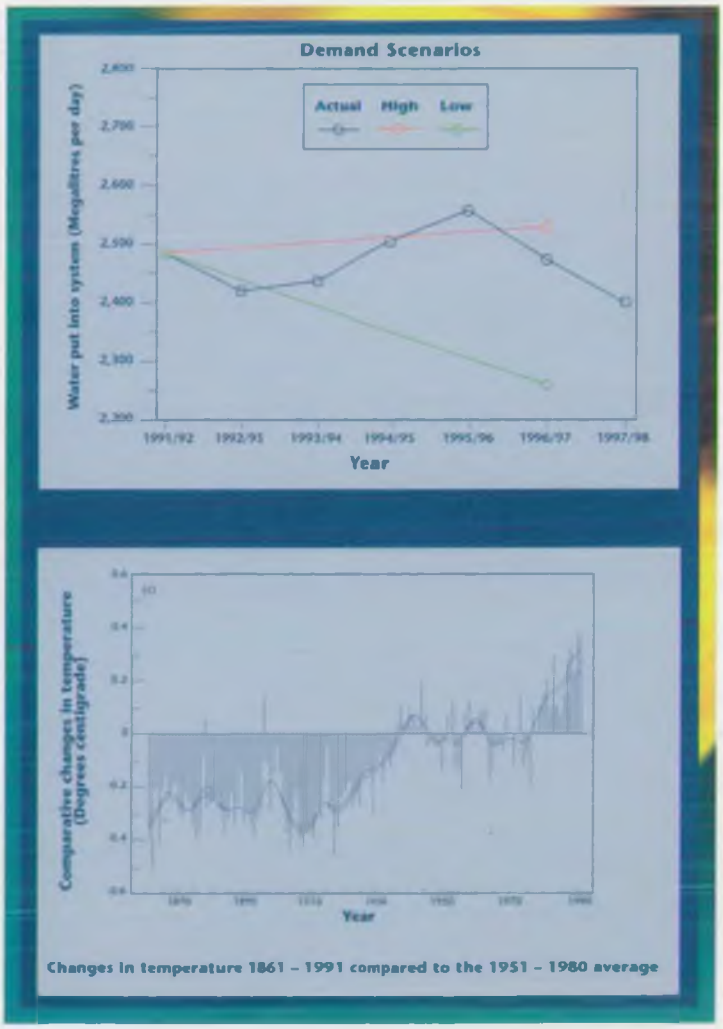
It is important this does not duplicate the water companies' role or relieve them of their task. It will, however, aim to underpin short-term messages as part of a longer term strategy of education and raising of awareness about water, its use and its value.

The Agency will therefore be developing a multi-targeted strategy aimed at influencing teaching in schools, industry and farming. Where we have our own direct customers, such as abstractors, this aspect will be developed by incorporating water efficiency messages and advice as part of licence enforcement work. Elsewhere, the assistance of trade associations or organisations such as the National Farmers Union will be sought to help influence changed perspectives about water use.

Environmental Baselining/ Climate Change

Establishing scientific and objectively based ways to understand how much water can be exploited has always been difficult. Species tolerance to water quantity changes tends to be more gradual than to water quality changes. Computer-based methods and other tools are continually being developed. These will need to be applied to some of the many flow and level protection thresholds currently in place to ensure they remain appropriate and give robust environmental protection to rivers for the future. They will also need to be applied to establish a formal prescribed flow in the River Trent itself as it becomes exploited. The involvement of a range of groups interested in the River Trent, such as anglers, navigation authorities and large water users, will be essential in this process. And, on the River Severn, to test the applicability of the current river flow regulation rules that we operate.

This baselining work will be even more relevant if climate change is a reality. Not only will the supply/demand balance be affected but there could be land use changes to consider and trends in environmental succession will alter. With these changes will come the need to look closely again at data and monitoring regimes now in place. Greater emphasis will be required on collecting hydro-ecological data as well as purely hydrological data such as river flow and rainfall.



Changes in temperature 1861 – 1991 compared to the 1951 – 1980 average

Healthy Habitats

Andrew Heaton, regional conservation officer, says the Agency will have to see whether too much water is being taken from some wetlands.

In recent years, there has been over-abstraction from wetlands, leading to environmental problems that have been exacerbated by summer droughts.

"In the future," Mr Heaton says, "much more attention will be paid to what is happening to the wetlands. We will be looking at the effect of abstractions, water quality, air quality, and land management," he says.

Pressures on water resources and quality generally, Mr Heaton adds, are a cause for continuing concern.

"Many of the threats to the region's environment are a legacy from the days when rivers were degraded by unsympathetic management or ill-judged effluent waste disposal," he says.

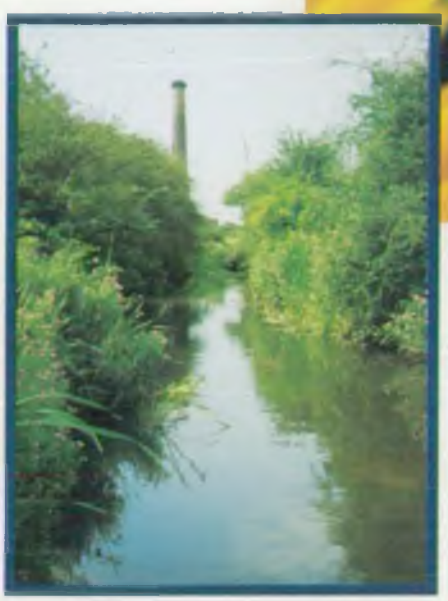
Current concerns include the danger of losing a number of more sensitive species to excess nutrients and hence the continuing need to remove phosphorous from water.

"We are restoring some river sections and producing water level management plans to ensure that wetlands enjoy appropriate water regimes," Mr Heaton says.

The Agency is also setting water quality objectives that allow healthy invertebrate life to flourish and ensuring waste disposal does not damage conservation sites.

Where possible, the Agency is recreating habitats and making sure aerial emissions do not harm wildlife through acid rain or by causing climate change.

Conservation
WHAT'S GOING ON



It is more difficult for the Agency to deal with pressures brought about by changing land use or development. However, it can advise that large-scale development in a floodplain is likely to be environmentally damaging, though the decision whether to go ahead will be taken elsewhere.

The Midlands region has a rich variety of landscapes and wildlife habitats. It includes four Areas of Outstanding Natural Beauty, six Environmentally Sensitive Areas, 700 Sites of Special Scientific Interest, (SSSIs) and the Peak District National Park.

There are many internationally important wetlands, from large estuaries such as the Humber and Severn to the peatlands of South Yorkshire and the Shropshire meres.

Under the EU Habitats Directive a series of nature conservation sites is being designated throughout Europe. In the Midlands region these include part or all of six Special Protection Areas for birds and 19 Special Areas of Conservation for all other animals and plants.

Under this directive the Agency must review any existing consents or licences on the sites to make sure they are not damaging to conservation interests.

An initial assessment suggests that the review will concentrate on a small number of sites – notably the Severn and Humber estuaries, the Peak District and the peatlands of Upper Severn and Lower Trent – over the next five years.

In conjunction with English Nature, the Agency is also identifying which SSSIs in its region are suffering from excessive water abstraction. Water regimes at some sites are already being monitored and abstraction cuts are being sought at others.

> We will be looking at the effect of abstractions, water quality, air quality, and land management

The Agency is co-operating with English Nature and the Countryside Council for Wales to conserve the river SSSIs on the Teme, Blythe and Lathkill.

Water Level Management Plans are being drawn up for some 60 or so conservation areas in the region where water levels are artificially controlled. For some of these, for example Hatfield Moors and the River Idle Washlands, the Agency has been drawing up plans with partners such as English Nature, Internal Drainage Boards and landowners.

RESTORATION

Recent schemes to restore degraded rivers include work on the River Idle north of Retford, the restoration of old meanders on the Erewash at Toton and the removal of a concrete channel and sheet piling from Yardley Brook and the River Cole in Birmingham.

Schemes planned for the near future include restoration of the River Sowe at Longford Park in Coventry and the opening up, with reedbed creation, of the Graisley Brook culvert in Wolverhampton.

> All the preceding issues are about biodiversity conservation

Mr Heaton says, "All the preceding issues – protection for prime sites, improvement of degraded rivers – are about biodiversity conservation."

STRATEGY

The Agency has produced its own biodiversity strategy. This highlights key national species and habitats in the region and identifies the Local Environment Agency Plans (LEAPs) where action is needed.

Already the Agency supports the River Severn Otter Project, which has seen otters return to the Midlands, and has installed passes to allow migratory shad to return to their spawning grounds. There have also been surveys of native crayfish and action to prevent the spread of non-native species, and conservation projects for great crested newts and water voles.

Conservation
THE ISSUES

Introduction

The Midlands region has a rich variety of wildlife, habitats, archeological features and landscapes. Many are protected by statutory designations – four Areas of Outstanding Natural Beauty and six Environmentally Sensitive Areas fall partly or wholly within the region, along with over half of the Peak District National Park. Many internationally important wetlands, from large estuaries such as the Humber and Severn to the peatlands of South Yorkshire and the Shropshire meres, occur within this region. Along with over 700 Sites of Special Scientific Interest (SSSI) and more than 1,500 Scheduled Ancient Monuments, there is a huge conservation heritage and resource to protect.

Under the law which established the Agency, we have a duty to have regard to, and in some instances to further, the conservation of the landscape, flora and fauna, and the cultural heritage. We must also respond to many other environmental laws and initiatives which guide our conservation work. Our general aim is to protect the best and improve the rest. This aim will be reflected in the work of the Agency in the coming years, including action in relation to the most important sites – SSSIs, Habitats Directive sites – and species (through the biodiversity initiative), and to the environment of degraded rivers through restoration projects.

Existing Pressures

Pressures on the environment in the region – and hence threats to conservation interests – are varied. Many are historic problems worsened by the recent drought – rivers degraded by centuries of unsympathetic management and their use for the disposal of wastes, and wetlands affected by drainage or over-abstraction of water. Where we can, we put right some of these problems: restoring sections of rivers, and producing water level management plans to ensure that wetlands benefit.

When issuing new authorisations, we are careful to assess their environmental impact. As a result:

- we set water quality objectives for rivers which allow healthy invertebrate life in them;
- we ensure that the disposal of waste does not damage sites of existing conservation interest and that restoration seizes opportunities to recreate habitats;
- we make sure that aerial emissions do not harm wildlife through acidification or, more generally, by causing climate change.

Other pressures on the environment are more difficult for us to tackle, such as development and other land use changes. We can advise that large-scale development in a floodplain is likely to be environmentally damaging, for example, but ultimately the decision lies elsewhere.

HABITATS DIRECTIVE

The European Union, under the Habitats Directive, is designating a series of sites of importance for nature conservation on a Europe-wide scale, to be known as "Natura 2000". This series will encompass both the Special Protection Areas (SPA) for birds, most of which are already designated, and the Special Areas of Conservation, (SAC) which are now being identified. Midlands Region encompasses all or part of 19 SACs and six SPAs which will contribute to this European series.

As these are of such significant conservation value, the Agency will have to consider very critically any applications for authorisations, or any of our own operations, which may affect them in future.

However, the Habitats Directive also requires us to review and affirm, modify or revoke all existing authorisations for SACs and SPAs. The intention is to ensure that any consents or licences we issued in the past are not affecting the conservation interests for which these sites were designated – just as future authorisations should not be allowed to affect them.

During 1997, the Agency has been assessing the significance of these duties, looking at the number of authorisations which may be affecting each site. The result is that the issues of concern appear to be concentrated on a few sites, notably the Severn and Humber estuaries, the Peak District, and the peatlands of Upper Severn and Lower Trent. It appears that we may need to review 30 abstraction licences, 100 discharge consents and 40 integrated pollution control authorisations. The work must be done between 1998 and 2004, so this review will be a significant area of work for the Agency in the coming few years, requiring close liaison between our conservation team and the authorising functions.

SSSIs AND WATER ABSTRACTIONS

With recent concerns over drought affecting sensitive wetland habitats, English Nature and the voluntary conservation bodies have reported on the vulnerability of important conservation sites to water abstraction. The Agency has been studying these reports to assess what our response should be.

Two English Nature reports have looked at the effects of abstractions on SSSIs – the key sites nationally for conservation of the country's wildlife heritage – including around 50 such sites in Midlands region. Through discussions internally and with English Nature, the Agency has been helping to decide which of these do indeed pose problems which need to be tackled. This has been helped by reports which the Agency commissioned investigating the hydrogeology of various SSSIs, as well as other research into the effects of water abstraction on sites of concern.

The review has shown that most SSSIs originally highlighted by English Nature are actually of low concern and are likely to be little affected by water abstractions in the future.

However, on several sites the future picture is not certain, and the Agency and English Nature between them will need to agree on what monitoring is needed, both of the hydrology and the ecology, to assess likely impacts and the measures needed to lessen them. We are already monitoring the system of water management at some of these sites; at other sites, other organisations will need to do the same.

At a few sites, the harmful effects of over–abstraction on conservation are already obvious. The Agency is working to bring about improvements at these sites, by such means as seeking to reduce abstractions or bringing in supplies of water.

Several of these sites are the subject of discussions between the Agency and the water companies over future investment needs.

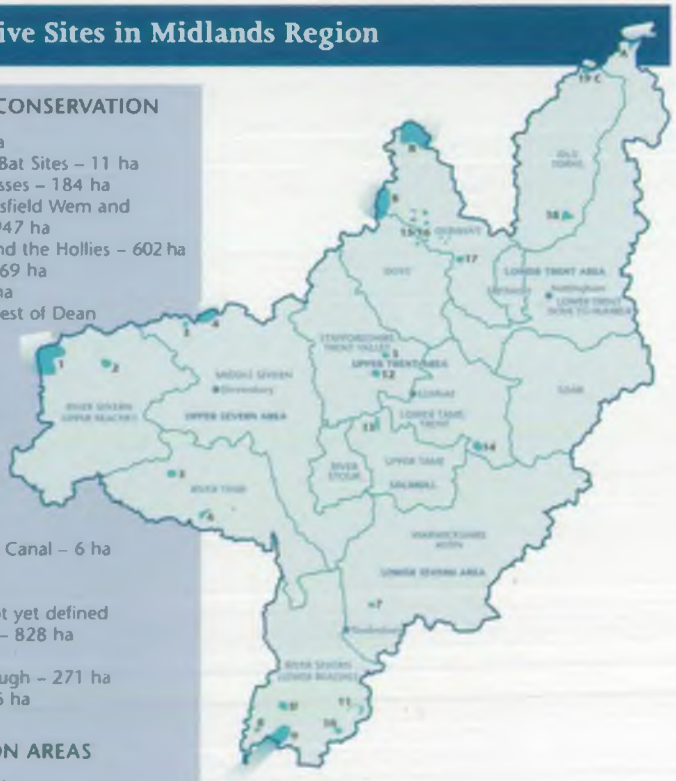
RIVER SSSIs

Under a memorandum of understanding between the Agency and English Nature – and a similar memorandum with the Countryside Council for Wales (CCW) – the organisations are to co-operate over conservation of the national series of river SSSIs which has been identified. Three rivers from this series are in our region – the Teme, Blythe and Lathkill.

Discussions have been going on between our area offices and their English Nature counterparts. The outcome, in the case of each river, is to be two documents: a conservation strategy, which is essentially a management plan for the river; and a consenting protocol, which sets out clearly – especially for the benefit of riparian owners – which of the statutory agencies grants consents for which activities on the river.

In the next few years close collaboration will be needed between the Agency, English Nature, CCW and all other interested parties which influence the management of the rivers. The aim will be to ensure that everyone keeps to the principles set down in the conservation strategies, and that these prime examples of natural heritage get maximum protection.

Habitats Directive Sites in Midlands Region



SPECIAL AREAS OF CONSERVATION

1 Berwyn – 14774 ha
2 Tanat and Vyrnwy Bat Sites – 11 ha
3 West Midlands Mosses – 184 ha
4 Fenns Whixall Bettisfield Wem and Cadney Mosses – 947 ha
5 The Stiperstones and the Hollies – 602 ha
6 Downton Gorge – 69 ha
7 Bredon Hill – 360 ha
8 Wye Valley and Forest of Dean Bat Sites – 1 ha
9 Severn Estuary – 73000 ha approx
10 Rodborough Common – 104 ha
11 Cotswold Beechwoods – 586 ha
12 Pasturefields Salt Marsh – 8 ha
13 Cannock Extension Canal – 6 ha
14 Ensor's Pool – 4 ha
15 Peak District Dales Woodlands area not yet defined
16 Peak District Dales – 828 ha
17 Gang Mine – 8 ha
18 Birklands and Bilhaugh – 271 ha
19 Thorne Moor – 976 ha

SPECIAL PROTECTION AREAS

A Humber Flats, Marshes and Coast – 15.230 ha
B Peak District Moors – 37.097 ha
C Thorne and Hatfield Moors – Area not yet defined
D Walmore Common – 51 ha
E Upper Severn Estuary – 1.357 ha
F Severn Estuary – 23.216 ha

Habitats Directive Sites: Priority List for Review of Authorisations

A	**URGENT**
	Fenns Whixall Bettisfield Wem and Cadney Mosses
	Cannock Extension Canal
	Severn Estuary
	South Pennine Moors (Peak District Moors)
	Thorne and Hatfield Moors
	West Midlands Mosses (Chartley Moss, Clarepool Moss)
	Humber Flats, Marshes and Coast
B	**FURTHER EVALUATION**
	Peak District Dales
	Peak District Dales Woodlands
	Stiperstones and the Hollies
C	**LOW PRIORITY**
	Pasturefields Salt Marsh
	Ensors Pool
	Wye Valley and Forest of Dean Bat Sites
	Rodborough Common
	Downton Gorge
	Cotswold Beechwoods
	Bredon Hill
	Birklands and Bilhaugh
	Walmore Common
D	**NO ACTION REQUIRED**
	Gang Mine
	Berwyn
	Tanat and Vyrnwy Bat Sites

Water Level Management Plans and River SSSIs

Water level management plans, where the Environment Agency is operating authority.

1. Fernhill Pastures
2. Ruewood Pastures
3. Aqualate Mere
4. Marton Pool
5. Puxton/Stourvale Marshes
6. Wilden Marsh and Meadows
7. River Teme
8. Avon Valley
9. Upton Ham
10. Rectory Farm Meadows
11. Upham Meadow and Summer Leasow
12. Old River Severn
13. Severn Ham
14. Coombe Hill Canal
15. Brandon Marsh
16. Doley Common
17. Churnet Valley
18. Old River Dove
19. Alvecote Pools
20. Birches Barn Meadow
21. Whitacre Heath
22. River Blythe
23. Hatfield Moors
24. River Idle Washlands
25. Ginny Spring
26. Attenborough Gravel Pits
27. Lockington Marshes
28. Narborough Bog

River SSSIs
- A. River Teme
- B. River Blythe
- C. River Lathkill

WATER LEVEL MANAGEMENT PLANS

The *Conservation Guidelines for Drainage Authorities*, first published by MAFF in 1991, required that water level management plans be produced for all areas of conservation interest where water levels are artificially controlled, with priority given to SSSIs. A guidance document, *Water Level Management Plans: A procedural guide for operating authorities*, explains how to decide upon the water management objectives for an area, taking into account all the varied interests. It also outlines the key issues which should be tackled.

Sensitive water level management is essential to conservation. In many cases, the present water level management regime will be acceptable to all interested parties. In others there may be scope to improve conservation by minor adjustment or by a fundamental review of management practices. The definition of appropriate sites includes those where the water regime is controlled by a pumped-drainage system, and sites where water levels are influenced by flood defence operations (that is, any watercourse or wetland near a watercourse which is subject to maintenance operations).

This means that, of the 60 or so sites in Midlands region which are appropriate for water level management plans, the Agency is the "operating authority", for 30, so we are responsible for leading on the production of the plan. For two of these – Hatfield Moors, River Idle Washlands – the Agency has been working for some while with partners such as English Nature, the Internal Drainage Boards and landowners, to draw up plans. This is not always easy, given the number of interests and activities (land drainage, flood defence, abstractions) that can influence the water regime of a site.

In the last year or so, the Agency has brought about the production of further water level management plans for which it has responsibility. This has been done either in-house through close co-operation between our conservation and flood defence teams as at Narborough Bog and several sites in Lower Severn or through the use of consultants (Alvecote Pools, Aqualate Mere). The outstanding sites – just four have as yet seen no progress – will be tackled by consultants appointed by the Agency in the coming year.

The challenge, now that the plans have been produced, is to see that they are implemented at each site. There will be a need for close monitoring and probably revision of some of the plans in the light of further knowledge.

RIVER RESTORATION

The Agency can also do much to improve the environment generally, through schemes to restore degraded rivers. Over the last few years, the Agency has undertaken various work, sometimes acting in partnership, to put right years of abuse or neglect, where rivers have suffered from poor water quality or insensitive management.

Recently, such schemes have included:

- comprehensive restoration work in the Avon catchment and on the River Idle north of Retford;
- removal of a concrete channel and sheet piling from the Yardley Brook and River Cole in Birmingham and replacement with a more natural watercourse; and
- improvements to the habitat at various river valley wetland sites along the Severn.

Schemes planned for the near future include the restoration of the River Sowe at Longford Park in Coventry, and the opening up, with reedbed creation, of the presently culverted Graisley Brook in Wolverhampton.

Conservation staff, together with our recreation and fisheries teams, are currently drafting a regional river reach strategy, which aims to set priorities for restoration projects. This will seek to take opportunities raised by AMP3 (the water companies' third asset management plan) and similar discussions in future, where better water quality and water regimes will enable improvements to the habitat and significant conservation benefits for the rivers concerned.

BIODIVERSITY

All the preceding issues – such as protection for prime sites and improvement of degraded rivers – are about biodiversity conservation, as "biodiversity" includes the full variety of life. However, the biodiversity initiative, which has taken off so strongly in this country in the last couple of years, has specifically identified a number of critical habitats and species, several of which are present in Midlands Region.

The Agency has produced its own interpretation of the biodiversity initiative in the form of a regional biodiversity strategy. This highlights the key national species and habitats which are to be found in the region, and identifies the Local Environment Agency Plans where action is needed to ensure their conservation.

Already the Agency has acted on a number of these – support for the River Severn Otter Project, which has seen otters return to the Midlands; passes put in to allow migratory shad to return to their spawning grounds; surveys of native crayfish and action to prevent the spread of non-native species; and conservation projects for great crested newts and water voles. As further LEAPs are produced, biodiversity targets will be written into them, and the Agency will do what it can to fulfil its conservation obligations in relation to these important habitats and species.

Biodiversity Priorities: Key Species and Habitats in the Midlands Region

All the following species, seen as national biodiversity priorities, are present, and require conservation action, in the Midlands Region:

- Water Vole
- Otter
- Aquatic Warbler (occasional visitor only)
- Bittern
- Great Crested Newt
- Natterjack Toad (one introduced population)
- Allis Shad
- Twaite Shad
- Marsh Fritillary
- White-clawed Crayfish
- Freshwater Pearl Mussel
- Desmoulin's Whorl Snail (one site only))
- Ribbon-leaved Water-plantain (one site only)
- Floating Water-plantain
- Derbyshire Feather-moss (one site only)

The following key species may occur in Midlands Region, but confirmation is required:

- Freshwater Pea Mussel
- Depressed River Mussel
- Harbour Porpoise
- Slender Green Feather-Moss

The following habitats, all key national biodiversity priorities, are found, and require conservation action, in Midlands Region:

- Reedbeds
- Fens
- Coastal and Floodplain Grazing Marsh
- Mesotropic Lakes

Glossary of terms

- DETR – Department of Environment Transport and the Regions
- LAs – Local Authorities
- EA95 – Environment Act 1995
- SMEs – Small and Medium sized Enterprises
- EC – European Community or Commission
- BSE – Bovine Spongiform Encephalopathy
- IPPC – Integrated Pollution Prevention and Control
- EU – European Union
- LEAPs – Local Environment Agency Plans
- OFWAT – Office of Water Services
- GIS – Geographical Information System
- IPC – Integrated Pollution Control
- BPEO – Best Practicable Environmental Option
- LAAPC – Local Authority Air Pollution Control
- COMAH – Control of Major Accidents Hazards
- AMP3 – Asset Management Plan

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- Water Resources Act 1991
- Control of Major Accidents and Hazards Directive 96/82/EC
- Habitats and Species Directive 92/43/EEC
- Environment Act 1995
- Environmental Protection Act 1990
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- Conservation guidelines for Drainage Authorities MAFF 1991
- Framework Directive on Water Quality 97/C/184/02
- Nitrates Directive 91/676/EEC
- Dangerous Substances Directive 76/464/EC
- General Development Procedure Order 1995
- Water Level Management Plans
- Groundwater Directive 80/68/EEC

MIDLANDS REGION ADDRESSES

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

UPPER SEVERN AREA
Environment Agency
Hafren House
Welshpool Road
Shelton
Shrewsbury SY3 8BB
Tel: 01743 272 828
Fax: 01743 272 138

LOWER SEVERN AREA
Environment Agency
Riversmeet House
Newtown Industrial Estate
Northway Lane
Tewkesbury GL20 8JG
Tel: 01684 850 951
Fax: 01684 293 599

UPPER TRENT AREA
Environment Agency
Sentinel House
Wellington Crescent
Fradley Park
Lichfield WS13 8RR
Tel: 01543 444 141
Fax: 01543 444 161

LOWER TRENT AREA
Environment Agency
Trentside Offices
Scarrington Road
West Bridgford
Nottingham NG2 5FA
Tel: 0115 945 5722
Fax: 0115 981 7743

— Area Administrative Boundaries

— Regional Boundary

● Area Office

▲ Regional Headquarters

ENVIRONMENT AGENCY

For general enquiries please call your local Environment Agency office. If you are unsure who to contact, or which is your local office, please call our general enquiry line.

ENVIRONMENT AGENCY
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