

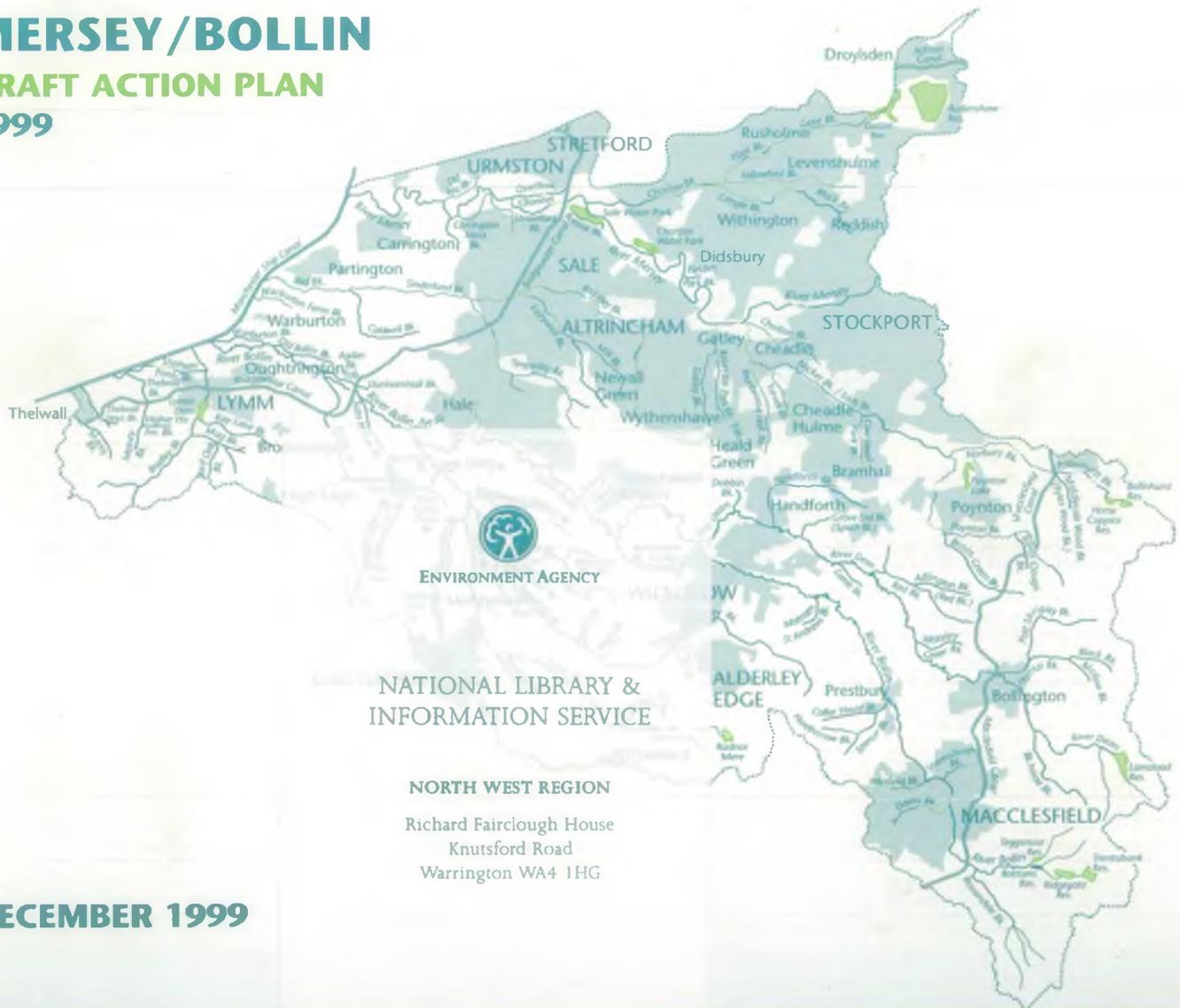


local environment agency plan

MERSEY/BOLLIN

DRAFT ACTION PLAN

1999



ENVIRONMENT AGENCY

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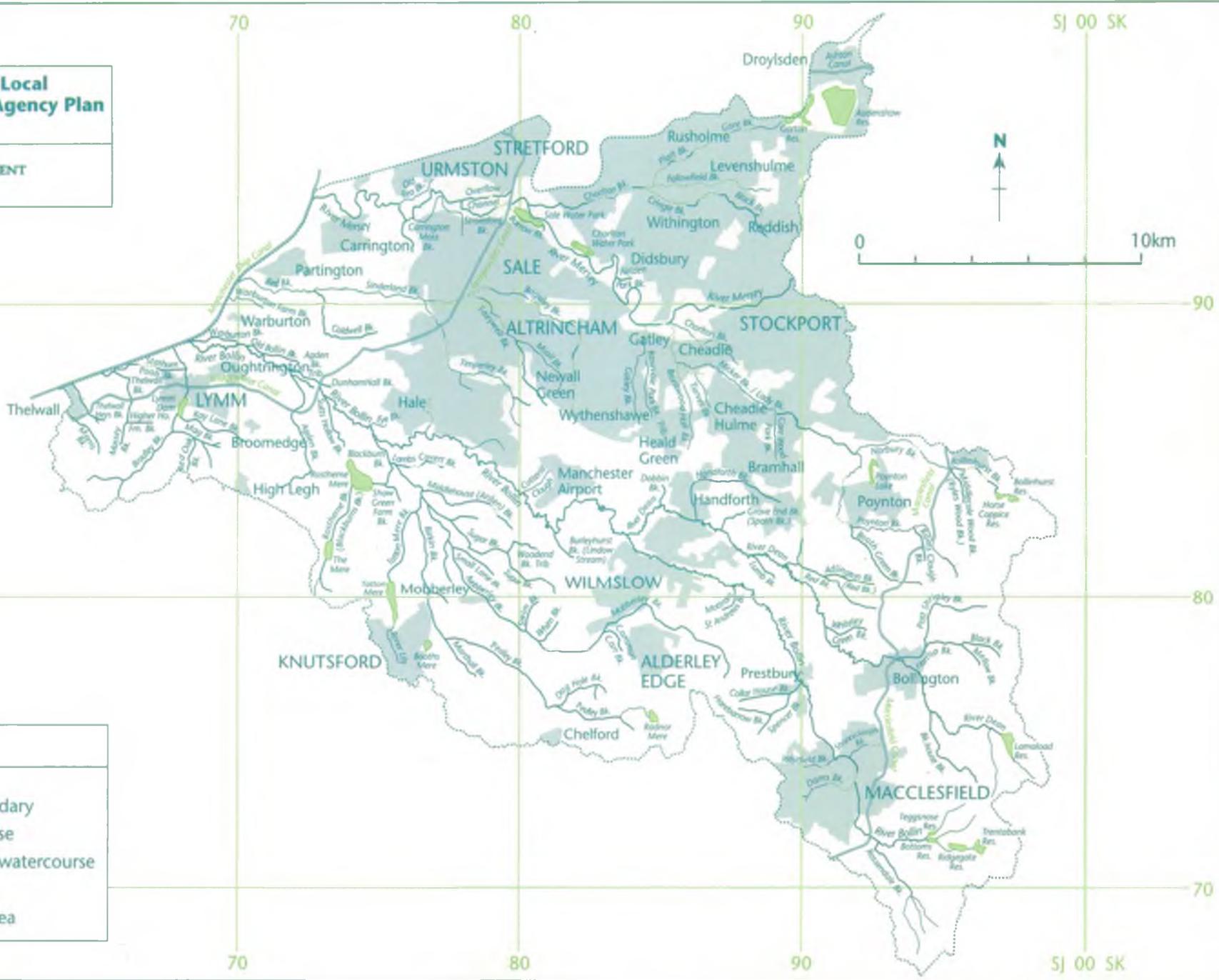
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ENVIRONMENT AGENCY

**Mersey/Bollin Local
Environment Agency Plan
Map 1**



The Area

KEY

- Area boundary
- Watercourse
- Culverted watercourse
- Canal
- Built up area

FOREWORD

This Local Environment Agency Plan (LEAP) is the last in the South Area LEAP programme. It brings together two of the sub-catchment areas previously covered by the Upper Mersey Catchment Management Plan (CMP) produced by the former National Rivers Authority in 1996. The process for this LEAP has been changed slightly in that we are consulting with you on this Draft Action Plan, as opposed to a full Consultation Report as was the case with the other LEAPs we have produced. This change was made because of the fairly recent consultation that took place on the CMP.

This change in the process does not, in any way, limit your chance to influence the actions that are taken to address the issues we are raising, and we welcome your input during the consultation period on this Draft Action Plan.

The plan, and the issues it raises, address problems relating to the Agency's areas of responsibility which are managing and regulating the water environment, regulating waste, major industrial processes and contaminated land. We have duties to protect and enhance biodiversity in everything we do, to protect landscape and heritage and to promote inland navigation and recreation. Whilst the plan focuses on our areas of responsibility, its delivery will require us to work in partnership with, and influence others. It needs the involvement of the public and business communities to secure its success.

The aim of the plan is to address local environmental issues, whilst recognising possible impacts on more global problems. Its delivery will help to protect the environment for future generations.

We look forward to your views and comments on the plan and the issues and actions we are putting forward. And hope that you will take this opportunity to work with us to protect and improve the environment in the Mersey/Bollin area.

George Ager
Area Manager
South Area

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DRAFT VISION FOR THE MERSEY/BOLLIN LEAP AREA

The Environment Agency has a vision of "A better environment in England and Wales for present and future generations"

Sustainable development addresses social, economic and environmental issues in an integrated way. To achieve an integrated and sustainable approach to managing this Local Environment Agency Plan (LEAP) area, we need to work in partnership with Local Authorities (Local Agenda 21), businesses, voluntary groups, environment groups and local communities. The aim will be to create and maintain a balanced environment and one which will be valued by local people.

Our Vision for a better environment in the Mersey/Bollin LEAP area is:

- of an area where watercourses are valued as important habitat and landscape features, allowed to flow unconstrained through natural flood plains, bordered by green corridors of land. This would lead to the development of a wide variety of natural river features such as earth cliffs and meander belts and would add to existing river features already highly valued.
- of an area where the Cheshire Meres, reservoirs, ponds and wetlands are recognised and protected as an asset for future generations. There would be a balanced eco-system, sufficient to support the maximum population of fish for the available habitat throughout the Plan area and enhance the bio-diversity of species and habitats in all areas.
- of continuous environmental improvements which are driven by local communities and which build on the successes of enterprises such as the Mersey Valley Partnership and the Bollin Valley Partnership.
- of an area where the industrial heritage of the area is identified and conserved and where the value of canals for recreation, navigation and as potential sustainable transport routes are recognised.
- of an area where watercourses are attractive and clean, with well maintained landscapes retaining their natural local character and cultural heritage, whilst supporting a wide range of recreational and amenity use.
- that water resources will be managed to enable cost-effective use that will ensure no unacceptable deterioration in quality or detriment to any existing water users, watercourses or other groundwater dependant features.
- to work alongside local authorities and local communities in managing waste in accordance with the principles of sustainability. In particular by reducing the amount of waste produced, and choosing waste management practices which minimise the risk of immediate and future environmental pollution and harm to human health.
- to ensure releases to air under our control are regularly reviewed and improved where necessary to protect the environment and human health.

Addressing the issues outlined in this plan will be the first step towards achieving this vision.

1. INTRODUCTION

The Environment Agency

The Environment Agency (the Agency) has a wide range of duties and powers relating to different aspects of environmental protection and management. These duties together with those areas, in which the Agency has an interest, but no powers, are described in more detail in Appendix 1. The Agency is required and guided by Government to use these duties and powers in order to help achieve the objective of sustainable development. The Brundtland Commission defined sustainable development as:

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

The Government's revised Sustainable Development Strategy 'A better quality of life' (DETR, 1999) sets out more detailed objectives, based on four broad aims:

- *Social progress which recognises the needs of everyone;*
- *Effective protection of the environment;*
- *Prudent use of natural resources;*
- *Maintenance of high and stable levels of economic growth and employment.*

At the heart of these aims are the integration of human needs and the environment within which we live. Indeed the primary aim of the Agency is to protect and improve the environment and make a contribution towards the delivery of sustainable development through the integrated management of air, land and water.

Our aims are:

- to achieve major and continuous improvements in the quality of air, land and water.
- to encourage the conservation of natural resources, animals and plants.
- to make the most of pollution control and river-basin management.
- to provide effective defence and warning systems to protect people and property against flooding from rivers and the sea.
- to reduce the amount of waste by encouraging people to re-use and recycle their waste.
- to improve standards of waste disposal.
- to manage water resources to achieve the proper balance between the country's needs and the environment.
- to work with other organisations to reclaim contaminated land.
- to maintain, improve and develop salmon and freshwater fisheries.
- to conserve and improve river navigation,
- to tell people about environmental issues by educating and informing.
- to set priorities and work out solutions that society can afford.

We will do this by:

- being open and consulting others about our work.
- basing our decisions around sound science and research.
- valuing and developing our employees; and,
- being efficient and businesslike in all we do.

Taking a long-term perspective will require us to anticipate risks and encourage precaution, particularly where impacts on the environment may have long-term effects, or when the effects are not reversible. We must also develop our role to educate and inform society as a whole, as well as carrying out our prevention and enforcement activities, in order to ensure continuing protection and enhancement of the environment.

Although we only have duties and powers to protect some environmental resources, we will need to contribute to other aspects of environmental management even where these are, in the first instance, the responsibility of others. We can only do this effectively by working in partnership with and through others in order to set and achieve common goals.

Introducing the Environmental Themes

Our principal and immediate environmental concerns are stated in our national strategy 'An Environmental Strategy for the Millennium and Beyond' (1997). We plan to revise the strategy in 2000, to take account of the Government's revised sustainable development strategy 'a better quality of life' (DETR, 1999).

A key element of our strategy is to group environmental issues in themes that affect all our functions, which represent the Agency's integrated approach to environmental management. Through the corporate planning process we set ourselves a list of specific actions to progress these themes. The actions and targets identified in the corporate plan for 2000/1 are summarised as follows:

Theme	Key Performance Targets Beyond The Millennium	Priority actions in 2000/01
 <p>Addressing climate change</p>	<p>Contribute to the UK Government's target to reduce emissions of six greenhouse gases (agreed at the Kyoto Summit) by 12.5 per cent below 1990 levels between 2008-12.</p>	<ul style="list-style-type: none"> Put in place a programme with quantifiable targets for the reduction of methane emissions from landfill operations that are consistent with the Government's UK Climate Change Programme.
 <p>Regulating industry</p>	<p>Implement the new regulatory regime arising from Integrated Pollution Prevention Control (IPPC), ensuring that the environment is at the heart of industry's thinking. Make readily available, good-quality information on emissions to the environment from industry.</p>	<ul style="list-style-type: none"> Ensure that all IPC processes and waste sites have an up-to-date Operator and Pollution Risk Appraisal (OPRA) score. Implement IPPC, bringing early sectors into regulation in line with DETR timetable. Conduct a review of Sellafield discharge authorisations.
 <p>Improving air quality</p>	<p>Reduce emissions of substances from sources regulated by the Environment Agency causing poor air quality or pollution of the atmosphere in accordance with the UK Government's National Air Quality Strategy (NAQS).</p>	<ul style="list-style-type: none"> Incorporate the necessary improvement programmes in authorisations to meet industry contributions to Government targets. We will also report annual emissions of NAQS substances from IPC processes through the Pollution Inventory (PI) from 1 January 2000 and quantify emissions to air from waste management activities.

Managing waste



Further improve the consistency and efficiency of the waste industry to minimise the environmental impact of waste management activities.

- Use information from the National Waste Survey to generate Strategic Waste Management Assessments, benchmark waste generation rates within industry sectors and inform waste minimisation programmes.
- Ensure, as far as possible, business compliance with targets in the Packaging Regulations so as to ensure the UK meets its national packaging recovery and recycling targets in 2001.

Managing water resources



By 2003, obtain co-operation of others to complete the agreed remedial action to reduce over-abstraction damage at nine SSSIs and 15 other priority sites (identified in the National Environment Programme).

Commence a national programme of abstraction management strategy development for England and Wales in 2001/02.

- By December 2000, ensure that national and regional abstraction management strategies are published.

Integrated river-basin management



By 2002, deliver net class upgrades in water quality to 800 km of rivers. By 2005, improve compliance with River Water Quality Objectives (from 82% currently) to greater than 90%.

Play our part in creating a thriving, integrated waterways network. Promote the recreational use of river basins.

By the end of 2005, increase bathing water compliance to at least 97 per cent with more bathing waters passing consistently, and achieve a significant improvement in guideline standards, particularly at major holiday resorts.

- Develop a risk-based approach to enforcement of sites subject to Groundwater Regulations.
- By 2001, use the asset management system to develop a prioritised programme of work to maintain and improve navigation assets, as part of waterway development plans for each navigation.
- By the end of 2000 increase bathing water compliance to 94 per cent, with more waters passing consistently.

Flood defence 	<p>Work with Government and other operating authorities in further developing a seamless and integrated service.</p>	<ul style="list-style-type: none"> • Agree and implement a finalised set of high-level targets for flood defence with effect from April 2000.
Conserving the Land 	<p>Implement the new legal framework for dealing with contaminated land. Make a significant contribution to the start-up of programmes of remediation at seriously contaminated sites.</p>	<ul style="list-style-type: none"> • Make a significant contribution to programmes of remediation at 80 seriously contaminated sites.
Managing freshwater fisheries 	<p>By 2003, develop fisheries on recovering rivers by restoring healthy and sustainable fisheries to 700 km of poor quality fisheries.</p>	<ul style="list-style-type: none"> • Develop pilot Fisheries Development Plans.
Enhancing biodiversity 	<p>By the end of 2003/04, complete a review of existing Agency authorisations to establish their effect on Special Protected Areas (SPAs) and candidate Special Areas of Conservation (cSACs) as required by the Birds and Habitats Directives.</p>	<ul style="list-style-type: none"> • Complete reviews of all Agency issued consents, licences and authorisations affecting 25 SPAs or cSACs.

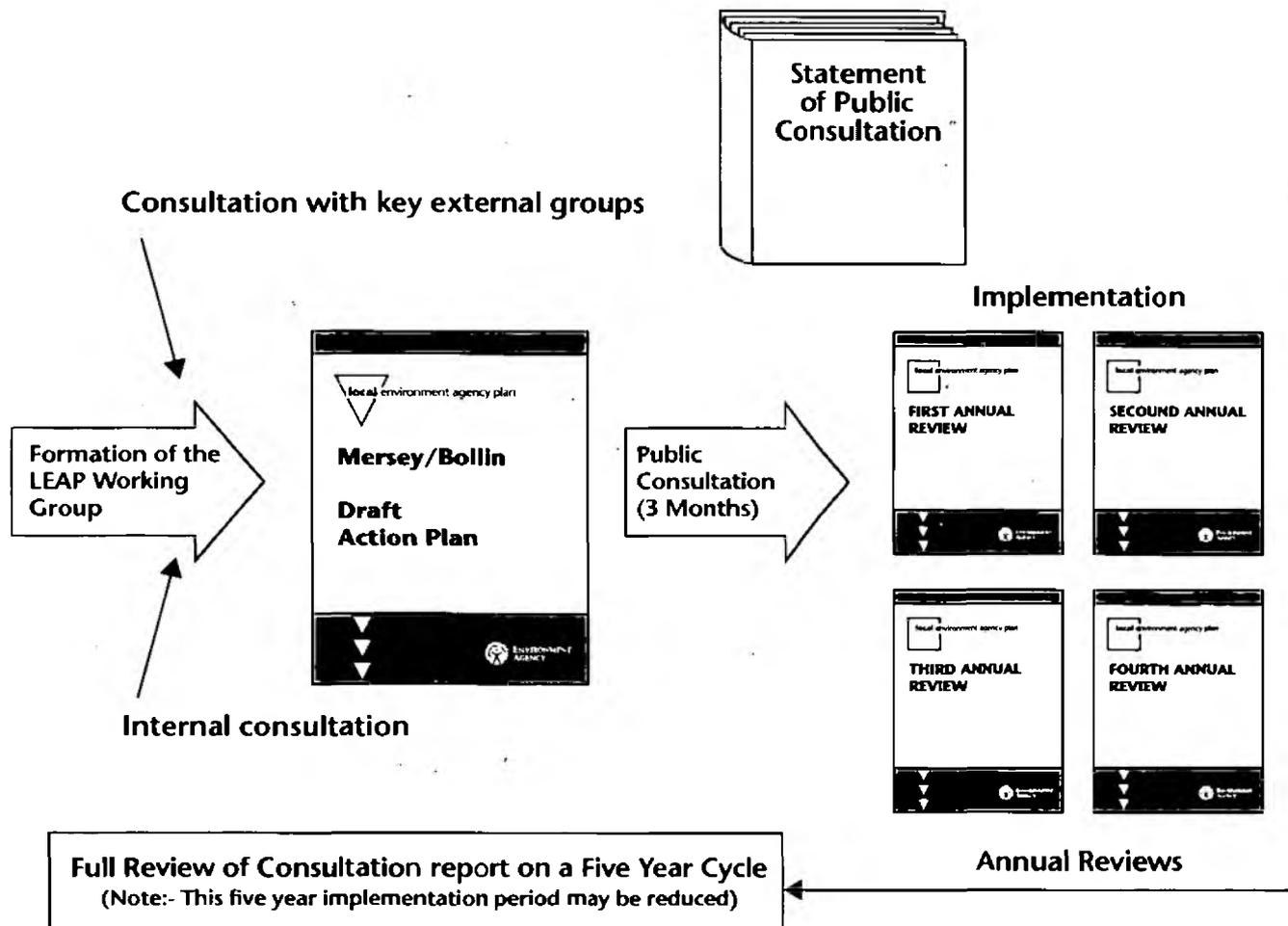
Local Environment Agency Plans

We are committed at the local level to a programme of Local Environment Agency Plans (LEAPs) in order to produce a local agenda of integrated action for environmental improvement.

LEAPs help us to identify and assess, prioritise and solve local environmental issues related to our functions, taking into account the views of our local customers. As a result, LEAPs allow us to deploy our resources to best effect and optimise benefit for the local environment. LEAPs are based on areas created by geographical catchments. The Agency's South Area of the North West Region is covered by seven LEAP areas:

Lower Mersey, Sankey/Glaze, Croal/Irwell, Roch/Irk/Medlock, Tame/Goyt/Etherow, Weaver/Dane and Mersey/Bollin.

The LEAP process involves several stages as outlined below:



Environmental Overview

The Environmental Overview is a factual description and analysis of the local environment. From this analysis a series of issues have emerged. The Environmental Overview provides background information for consideration by the Agency's partners and those individuals and organisations generally interested in the local area.

LEAP Consultation Report

The LEAP process used for the Mersey/Bollin LEAP has been changed slightly from the normal process. This means that a Consultation Report is not being produced. This change has taken place because there was extensive consultation carried out on this area in 1996. The Upper Mersey Catchment Management Plan Consultation Report was launched in February 1996 at Handforth alongside the River Bollin and the runway of Manchester Airport. It was attended by 150 people from a wide range of interests within the catchment. A three month consultation period followed, during which 2500 documents were distributed, concluding on the 1st June 1996. All responses to the consultation were considered and an Action Plan was published in November 1996.

LEAP Draft Action Plan

The Mersey/Bollin LEAP, Draft Action Plan, attempts to highlight the most significant issues following on from the Environmental Overview. Consultation for this LEAP will be on this document, instead of a LEAP Consultation Report, as discussed above.

The publication of this LEAP Draft Action Plan marks the start of a three month period of formal consultation. The purpose of the consultation period is to enable the Agency and all external organisations and the general public to discuss and, where possible, reach a consensus about the management of the area. The Agency will be seeking commitment to planned actions by others wherever possible.

Your views will be considered in preparing the next phase of the LEAP. At the end of the consultation period a Statement of Public Consultation will be produced, which will summarise the views, expressed during the consultation process.

Annual Review

The Agency will be jointly responsible, with other organisations and individuals, for implementing the LEAP Action Plan. Progress will be monitored and normally reported annually, by means of a published review document.

The Annual Review will comprise the following information:

- A detailed comparison of actual progress against planned progress.
- Identification of additional issues and actions to maintain progress in the light of changes in the area.
- Consideration of the need to update the LEAP.

The need for up-dating will obviously depend on the particular issues of the area. However, updates to the LEAP will normally be undertaken every five years. Key organisations and individuals forwarding comments will receive an annual review paper to update them with the Action Plan progress.

Partnerships and LEAPs

LEAPs rely largely on identifying and building partnerships to promote action to resolve local environmental issues. The Agency often has no powers to control directly all identified actions. We strive to build partnerships and encourage public participation and to raise awareness of environmental issues. Section 4 expands on achieving improvements and protection of the environment through a partnership approach.

Links between LEAPs and Land Use Planning

The links between development plans and LEAPs are most important; (structure plan and local plan together comprise the development plan). The recognition of LEAPs in development plan preparation is essential, as certain LEAP issues could have an impact on future land use planning and achieving the objective of sustainable development.

Sustainable development is one of the major challenges facing society today. The Government is currently pursuing a number of initiatives that will incorporate the principles of sustainable development more firmly into the planning system. This includes a wider role for Regional Planning Guidance (RPG), to produce a more comprehensive 'spatial' strategy designed to balance needs for development with the need to protect the environment and achieve social and economic objectives. A sustainability appraisal will be integral to the RPG process. The RPG is translated at a local level through the structure plans and local plans (the development plans). From now on, development plans have to incorporate sustainable development objectives. The recently published good practice guide *Planning for Sustainable development: Towards Better Practice, DETR 1998* suggests a systematic method to assist Local Authorities in integrating sustainable development into their development plans. As part of this, the longer term and secondary effects of development need to be recognised. The methodology puts forward aims to place sustainable development at the heart of plan preparation, and integrates it into each stage of the process, resulting in greater emphasis on identifying objectives and indicators as a basis for subsequent monitoring.

The good practice guidance states that planners in all circumstances should be aiming to:

- avoid dangerous interference with the **climate** system;
- protect and improve the **quality of air, soil and water**;
- minimise the **use of resources** (e.g. land, building materials, water);
- protect and enhance the **built heritage**; and
- conserve the **diversity of species and habitats**.

2. MERSEY/BOLLIN LEAP AREA – AN OVERVIEW

The area covered by the Mersey/Bollin LEAP is the geographical unit covered by the water catchments of the Rivers Mersey (upstream of the Manchester Ship Canal) and Bollin, their tributaries and covers approximately 535 km². Principal towns within the area include Alderley Edge, Altrincham, Knutsford, Macclesfield, Sale, Stockport, Stretford and Wilmslow. The area is heavily urbanised in the north around Stockport, Altrincham and Manchester, contrasting with more rural areas of Cheshire, to the south and east. Part of the Peak District National Park is also included in this LEAP area. The Manchester Ship Canal is included in the Sankey/Glaze LEAP.

The northern and western parts of this area are well served by the national motorway network, with parts of the M6, M56 and M60 crossing the area. The completion of the M60 ring road around Manchester (due to be opened in year 2000) will increase the number of links available. The motorway network, coupled with Manchester Airport, located in the heart of the area, will no doubt be attractive for industrial and retail development.

A notable feature of the catchments is the large number of water bodies, for example the Cheshire Meres, large reservoirs and ponds that are valuable conservation, amenity and historic resources. There are 12 Sites of Special Scientific Interest (SSSIs) which can be found in the LEAP area and 132 sites of biological importance which are designated by the Local Authorities. Also Rostherne Mere is an internationally important Ramsar site (Ramsar is an international designation for wetlands with particular importance for birds) and a national nature reserve.

Flooding on the River Mersey is not frequent, due to the flood protection provided to the River Mersey floodplain, from Heaton Mersey to Ashton-on-Mersey. This has been protected by extensive flood banking for several hundred years. To alleviate flooding on the River Mersey the Agency operates two Flood Storage Basins. These are located at Didsbury and Sale. Although the rural nature of much of the Bollin catchment makes it less prone to serious flooding there remains a risk to property in urban areas as exemplified by the flooding that occurred in Macclesfield and Prestbury in October 1998. In the LEAP area specific flood warning procedures are in place for the River Mersey at Sale and Didsbury. Also, following the flooding in October 1998, the Agency passes raingauge alarms from Prestbury and Langley Bottoms to Macclesfield BC.

The Agency is responsible for balancing the demand for water resources whilst ensuring these demands do not result in unacceptable environmental impacts. Managing growth in demand for water is a key element in this equation. The Agency is working closely with North West Water Ltd who are promoting water conservation measures and leakage targets for this area. An excellent start has been made in Cheshire with the year 2000 target of a reduction of 30% being achieved and exceeded by 1998. The last three years reduction rates in leakage of 5%, 19% and 14% gives a total of 38% less water lost from leaky pipes.

Air pollution from industrial processes has been dramatically reduced over the last 30 years in this area. Local Authorities are in the process of implementing Air Quality Management Strategies and the Agency will continue to work with them to improve air quality.

Landfill is the major method of waste disposal. While 15 of the sites licensed in the area only dispose of inert waste, there are 6 sites licensed to take a range of controlled waste. All the Local Authorities within this area have set targets to reduce household and commercial waste going to landfill. There are a number of bodies as well as the Agency who are able to offer advice on environmental improvements and waste minimisation in this area (see Partnerships).

Water quality in the area is improving with one quarter of the watercourses being classified as good and less than 2% being classified as having bad water. Watercourses in the area provide suitable habitat for both coarse and game fish species. This, together with the water quality of the area, means that most watercourses support fish, and the River Bollin catchment is recognised as having the greatest potential for supporting game fish including salmon and sea-trout.

Our task in partnership with others is to ensure activities and developments are managed in an environmentally sustainable way.

3. THE ISSUES

The issues are presented with a number of actions, a target timetable and the identification of responsible parties. Where possible, costs have been outlined for the period covered by the plan. This does not necessarily reflect the total cost of the schemes and is sometimes a projected estimate to be more accurately costed later. The names put against the responsibility for the Agency are those of the Area Management Team member whose function is responsible for the action. This document is produced in good faith, recognising current priorities and funding, both within the Agency and other organisations. Future Annual Reviews will include more targeted costing and specific sites after these have been investigated.

The issues we are putting forward within this LEAP are environmental problems that fall within the areas of responsibility of the Agency. These issues have not been placed in any order of preference or priority.

1. Adverse impact of discharges from Wastewater Treatment Works on the aquatic environment.
2. Adverse impact of discharges from sewer overflows on the aquatic environment.
3. Adverse impact of contaminated surface water discharges on the aquatic environment.
4. Adverse impact from industrial and trading estates drainage on the aquatic environment.
5. Adverse impact on river water quality due to undetermined pollution sources.
6. The need for effective use of water resources to reduce environmental impacts.
7. Falling groundwater levels.
8. Impact of contaminated land on the environment.
9. Adverse environmental impact of unauthorised waste management activities (including fly-tipping).
10. Lack of awareness and implementation of the Government's strategy for sustainable waste management (The "Waste Hierarchy").
11. The need for continued habitat improvement and protection of existing wildlife habitats to conserve and enhance biodiversity.
12. Impact of Manchester Airport Runway 2 construction on the aquatic environment.
13. The impact of nutrient enrichment on aquatic communities. And the identification of issues involved in conservation management for Cheshire Meres and Mosses.
14. Invasive non-native pest species.
15. Channelised watercourses creating loss of habitat, amenity and landscape character.
16. Lack of awareness and access for recreational use of many of the watercourses of the area.
17. In-river structures causing restricted fish passage and migration, and reduced recreation use.

18. Culverts causing flood risk and loss of habitat.
19. Flooding problems.
20. Poor access to watercourses for maintenance works.
21. Lack of knowledge of built heritage is leading to its deterioration and destruction along the area's rivers.



ISSUE 1 – ADVERSE IMPACT OF DISCHARGES FROM NORTH WEST WATER LTD WASTEWATER TREATMENT WORKS ON THE AQUATIC ENVIRONMENT

Background

The Agency has strategic targets known as River Ecosystem (RE) River Quality Objectives (RQO's) which provide a basis for water quality management decisions. Details of the RQO's scheme and those for the Mersey/Bollin LEAP area are given in Appendix 4.

Discharges from a number of North West Water Ltd. (NWW Ltd) Wastewater Treatment Works (WwTWs) have significant adverse impact upon the water quality in the Mersey Bollin LEAP area.

In March 1999 the Environment Minister announced that all WwTWs identified by the Environment Agency as needing improvement to comply with statutory requirements (e.g. EC Directive) or to advance toward achieving long term RQOs, would receive investment during North West Water Ltd Asset Management Plan 3 period.

Effects on Watercourse

- Elevation of biochemical oxygen demand/ammonia concentrations.
- Reduction in dissolved oxygen levels.
- Elevated nutrient levels and weed growth.
- Reduction in diversity of aquatic flora and fauna.
- Lack of sustainable fish populations.
- Presence of sewage fungus.
- Foam and colour problems.

Failures to Achieve River Quality Objectives (RQO's)

The following wastewater treatment works have been identified as contributing to their receiving waters failing to meet their RQOs:

- Mobberley, Great Warford and Alderley Edge WwTW – Mobberley Brook.
- Wilmslow WwTW – River Dean.
- Hale WwTW – River Bollin.
- Stockport WwTW – River Mersey.
- High Legh WwTW – Agden Brook.
- Altrincham WwTW – Red Brook.

In his announcement of 1st March 1999 the Environment Minister stated that all works contributing to RQO failures will be included for improvements under NWW Ltd's Asset Management Plan for 2000 - 2005 (AMP3). The final programme has yet to be agreed. The final announcement is due in November 1999. Improvements carried out under AMP3 should ensure compliance with the short term RE RQO but further improvements might be required to achieve the long term RQO.

Failures to Ensure Compliance with EC Freshwater Fish Directive

Rainow WwTW has been identified as needing improvement to ensure that ammonia standards in the River Dean comply with the requirements of the EC Freshwater Fish Directive. Although no failures of the directive have been identified, ammonia is not currently controlled by the consent to discharge. To ensure compliance the consent would need to be reviewed and ammonia controlled as a specific condition.

Failures to Provide Appropriate Treatment

The Urban Wastewater Treatment Directive requires that by 31st December 2005 all urban wastewater entering collecting systems shall receive 'Appropriate Treatment'. In the case where the discharge derives from treatment plants serving less than 2000 population equivalent, discharging to freshwaters, this means that the receiving waters should meet the relevant quality objectives. In the Mersey Bollin area two such discharges are currently considered as not receiving appropriate treatment. These are Warford Terrace WwTW and Hawthorn View WwTW that have been identified as needing improvements to achieve this requirement.

Aesthetic Impact

The impact of discharges from WwTW discharges can typically cause aesthetic problems in the receiving waters such as colour and foaming.

The discharge from Macclesfield WwTW can cause discolouration and foaming in the River Bollin from time to time; NWW Ltd. Trade effluent officers are seeking to control these problems at source.

Eutrophication

The effect of nutrient enrichment has become more apparent in recent years through a reduction in organic pollution. When a river is suffering from organic enrichment the more obvious effects of nutrient enrichment such as excessive weed growth and strong diurnal dissolved oxygen variations are masked. Other effects that help identify sensitive waters are high orthophosphate concentrations and decreased diversity and abundance of fish and invertebrates. Waters which appear to be affected by eutrophication and which receive qualifying discharges (greater than 10000 population equivalent) are being investigated to be put forward as qualifying candidates for designation in 2001 as sensitive waters under the Urban Wastewater Treatment Directive. If designated nutrient removal needs to be installed on the discharge within seven years. The River Bollin has been identified as a possible candidate for inclusion in this project.

What is already happening

Expenditure by NWW Ltd on improvements to WwTWs to reduce their environmental impact is determined during the periodic review and set out in an Asset Management Plan (AMP). An introduction to these is given in **Appendix 5**.

Investment by NWW Ltd in the LEAP area during AMP2 (1995-2000) has included improvements to ensure compliance with the EC Freshwater Fish Directive at Adlington and Knutsford WwTW and improvements at Macclesfield WwTW to improve poor water quality in the River Bollin.

Action	Responsibility		Total Cost (£K)	1999 /00	2000 /01	2001 /02	2002 /03	2003 /04	Future
	Lead	Other							
1. Undertake improvements during AMP3 to reduce the organic load from Stockport, Sale(i), Wilmslow, Altrincham, High Legh, Alderley Edge, Hale, Great Warford and Mobberley WwTWs to achieve/ensure the compliance with short term RE RQOs.	NWW Ltd Environment Agency (S Lever)		U		•	•	•	•	•
2. Evaluate requirements for (further) improvements at WwTWs for achievement of long term RE RQOs and pursue expenditure in NWWs capital programme.	Environment Agency (S Lever)	NWW Ltd	5 (ii)				3.5	1.5	•
3. Undertake improvements in AMP3 Rainow WwTW to ensure compliance with the EC Freshwater Fish Directive.	NWW Ltd Environment Agency (S Lever)		U		•	•	•	•	

- (i) OFWAT have asked for Sale to be re-evaluated.
- (ii) Based on expected requirements for improvements.

Action	Responsibility		Total Cost (£K)	1999 /00	2000 /01	2001 /02	2002 /03	2003 /04	Future
	Lead	Other							
4. Identify potential "sensitive" areas under the EC Urban Wastewater Treatment Directive and apply a monitoring strategy to put forward a case for designation in 2001.	Environment Agency (S Lever)		R	2	2.06	3.5			
5. Undertake improvements at Warford Terrace and Hawthorne View WwTW in AMP3 to ensure compliance with the UWWT directive 'Appropriate Treatment'.	NWW Ltd Environment Agency (S Lever)		U		•	•	•	•	•



ISSUE 2 – ADVERSE IMPACT OF DISCHARGES FROM SEWER OVERFLOWS ON THE AQUATIC ENVIRONMENT

Background

In most areas of the Mersey Bollin LEAP a network of public sewers exist, owned by North West Water Ltd. Older sewerage networks are of the combined type, that is both foul and surface waters are conveyed together in one pipe to the sewage works. To prevent foul flooding of property during storm conditions, relief overflows called Combined Sewer Overflows (CSO) were provided. CSOs are designed to operate only in storm conditions when the sewage is dilute and the available dilution in the receiving water is high.

The increase in commercial and residential developments over recent years has resulted in greater flows in the sewerage system. In some combined sewers there is inadequate capacity to deal with these extra flows, leading to premature operation of the overflows in storms of lower severity. Sewer overflows of poor design or dilapidated structure may also be prone to blockage potentially causing discharge in dry weather.

Emergency overflows (EO) from sewage pumping stations can also cause problems when the station is inoperative as a result of power failure, mechanical breakdown, rising main failure or blockage of the downstream sewer.

CSO and EO discharges are regulated by consents to discharge issued by the Environment Agency.

Effects on Watercourse

- Temporary elevation of biochemical oxygen demand/ammonia concentrations.
- Temporary reduction of dissolved oxygen levels.
- Deposition of organic solids causing repetition of temporary effects on re-suspension.
- Lack of sustainable fish populations.
- Elevated nutrient levels and excessive weed growth.
- Reduction in diversity of aquatic fauna and flora.
- Reduction in aesthetic quality due to the presence of sewage fungus, sewage solids and sewage litter.

Effect on the River Ecosystem

The organic load discharged from sewer overflows lead to a temporary elevation in biochemical oxygen demand and ammonia concentrations, and a reduction of dissolved oxygen levels. Dependent on severity, duration and frequency this can limit invertebrate and fish populations. The temporary effects could be detected as contributing factors in failures to meet short term RE RQOs. The following stretches have combined sewer overflows that are contributing to the stretch failing its RE RQO:

- Sow Brook– QSL at Lymm Dam to MSC.
- Timperley Brook – QSL at Wellfield Lane to Sinderland Brook.

Aesthetic Impact

The operation of CSOs can lead to an adverse aesthetic impact on the receiving water by the deposition of sewage solids and litter. The following watercourses are affected by the aesthetic impact of storm overflows:

- River Mersey – Stockport Town Centre to Manchester Ship Canal.
- Lumb Brook/Carr Wood Park Brook – Bramhall.
- Turves Brook – Cheadle.
- Cringle Brook – Levenshulme.
- Stromford Brook – Sale
- Whitehall Brook – Alderley Edge
- River Bollin – Macclesfield to Prestbury
- Micker Brook – Hazel Grove/Bramhall

What is already happening

Expenditure by North West Water Ltd on sewer overflow improvements to reduce their environmental impact is determined during the periodic review and set out in an Asset Management Plan (AMP). An introduction to these is given in **Appendix 5**.

During AMP2 a limited amount of CSO/EO improvements were carried out in the area, both as part of the Gore Brook/River Tame pollution prevention scheme. Improvements were made at Manshaw Road and Lumb Lane in Audenshaw.

There are 231 sewer overflows in the Mersey Bollin area, 67 of which are currently designated as having an unsatisfactory impact on their receiving water. In his announcement of March 1999 the Environment Minister said that all sewer overflows currently designated as unsatisfactory have been included for improvement in NWW Ltd's AMP3 programme. (**Appendix 5**).

Action	Responsibility		Total Cost (£K)	1999 /00	2000 /01	2001 /02	2002 /03	2003 /04	Future
	Lead	Other							
1. Improve the performance of the unsatisfactory sewer overflows programmed for investment in AMP3.	NWW Ltd Environment Agency (S Lever)		U		•	•	•	•	•
2. Identify and prioritise the unsatisfactory CSOs for investment in AMP4.	Environment Agency (S Lever)		R			•	•	•	•



ISSUE 3 – ADVERSE IMPACT OF CONTAMINATED SURFACE WATER DISCHARGES ON THE AQUATIC ENVIRONMENT

Background

Most developments built in the last 30 years are drained by separate systems. One pipe conveys uncontaminated surface water run-off and discharges into local watercourses, whilst the other takes foul water to a wastewater treatment works.

Pollution of watercourses can occur when foul drainage is wrongly connected to the surface water system, either above ground or below ground. Where dual manholes occur, where the foul and surface water pipes are open and adjacent to each other in one manhole, then any damage to the foul pipe, including blockages will result in foul water being discharged into the surface water. Any spillage or deliberate disposal of contaminated liquids to drain can result in contamination of the surface water system. This can have a significant impact upon the receiving water into which it is discharged.

Effects on Watercourses

- Elevation of biochemical oxygen demand.
- Reduction of dissolved oxygen levels.
- Presence of sewage fungus.
- Unpleasant odours.
- Aesthetic impact due to presence of sewage solids and sewage litter.
- Reduction in diversity of aquatic flora and fauna.
- Impact upon fish populations.

Examples of Contaminated Surface Waters

- Cheadle Royal Hospital, Cheadle, affecting un-named tributary of Micker Brook.
- Tarvin Road, Cheadle, affecting un-named tributary of Micker Brook.
- Broadway Avenue, Cheadle affecting un-named tributary of Micker Brook.
- Moss Lane, Hale affecting tributary of Timperley Brook.
- Brooks Drive, Timperley affecting un-named tributary of Micker Brook.
- Rosevale Park, Heald Green affecting tributary of Gatley Brook.

What is already happening

The Agency has undertaken the identification and prioritisation of contaminated surface water discharges. A list of 200 CSWs, ranked by the impacts they have on the receiving watercourse, has been produced by the Agency. NWW Ltd have funded a project prior to AMP3 to investigate the top 53 of these, 3 of which are in the Mersey Bollin. The Environment Minister announced in March 1999 that solutions to the remaining CSWs, 16 of which are in the Mersey Bollin will be developed under NWW Ltd's AMP3 program.

In a survey carried out by the Agency during 1999 it was discovered that 5% of private households and 20% of industrial premises have wrong connections. A regional campaign will be carried out to improve people's understanding of the problem. The Agency has produced a leaflet entitled "making the right connection" which explains how wrong connections occur, why they result in water pollution and whose responsibility it is to put them right.

Action	Responsibility		Total Cost (£K)	1999 /00	2000 /01	2001 /02	2002 /03	2003 /04	Future
	Lead	Other							
1. Investigate the cause of the contaminated surface water drains at Rosevale Park, Cheadle, Old Eea Brook, Urmston and Altrincham Football Ground.	NWW Ltd Environment Agency (D Forster)	Local Authority	U	•					
2. Investigate the cause of the contaminated surface water drains identified for inclusion in AMP3.	NWW Ltd Environment Agency (D Forster)	Local Authority	U		•	•	•	•	•
3. Undertake work to correct the causes of the contaminated surface water drains.	NWW Ltd	Local Authority House-Holders	U	•	•	•	•	•	•
4. Promote awareness to the problem and new means of surface water control.	Environment Agency NWW Ltd Local Authorities		R	•	•	•	•	•	•



ISSUE 4 – ADVERSE IMPACT FROM INDUSTRIAL AND TRADING ESTATES DRAINAGE ON THE AQUATIC ENVIRONMENT

Background

In urban areas of the Mersey and Bollin catchments the surface water drainage from industrial and trading estates can be highly contaminated, leading to localised gross pollution and failures of the stretch to achieve its long term objective. Industrial and trading estates usually contain a variety of businesses, the nature of trade can change as businesses leave and new ones move in. This can lead to a variety of contaminants entering the surface water system due to accidents, negligence, poor storage and the mis-handling of oil, chemicals and waste. In addition heavy goods vehicles frequently use the estate roads and the run off can be contaminated.

Effects on Watercourse

- Increase in biochemical oxygen demand.
- Elevated suspended solids concentrations.
- Reduction in dissolved oxygen levels.
- Release of toxic, persistent or bioaccumulative substances.
- Reduction in numbers and diversity of aquatic flora and fauna.
- Formation of oil and grease films on the waters surface.
- Discolouration of the water.

Examples

- Newby Road Industrial Estate, Hazel Grove affecting unclassified tributary of Micker Brook.
- Roundthorn Industrial Estate, Wythenshaw affecting Fairywell Brook.
- Stanley Green Industrial Estate, Handforth affecting Spath Brook.
- Adlington Industrial Estate, Adlington affecting Red Brook.
- Hurdsfield Industrial Estate, Macclesfield affecting Shawclough Brook.

What is already happening

At Newby Road Industrial Estate negotiation with NWW Ltd and their Agents Stockport MBC has led to the installation of a system in the surface water drains to divert dry weather flows to the foul sewer.

At Stanley Green Industrial Estate improvements have already been seen in water quality after two companies were found to have trade effluent discharging to watercourse.

Pollution prevention inspections at all industrial estates will continue to identify actual and potential sources of pollution.

Action	Responsibility		Total Cost (£K)	1999 /00	2000 /01	2001 /02	2002 /03	2003 /04	Future
	Lead	Other							
1. Identify pollution sources and pursue good site operation and waste minimisation programme.	Environment Agency (D Forster)	Site Operators and Owners	R	•	•	•	•	•	•
2. Investigate and pursue remediation of oil pollution from Roundthorn Industrial Estate.	Environment Agency (D Forster)		U	•	•	•			



ISSUE 5 – ADVERSE IMPACT ON RIVER WATER QUALITY DUE TO UNDETERMINED POLLUTION SOURCES

Background

In some cases the root cause of water quality problems is not fully understood and investigative work may be required. These problems may be the result of diffuse sources or from unidentified point sources. For example in some areas intermittent discharges from farms or industrial estates are suspected as having a contribution to poor water quality. Their relative contribution and impact on the environment needs to be evaluated.

The Agency undertakes a programme of routine biological monitoring of watercourses, which is able to identify the impacts of pollutants that are not currently identified through chemical monitoring. This means that there are many watercourses where the aquatic invertebrate communities have been impaired indicating a poorer water quality than has been detected in chemical sampling. This is an issue in the Mersey Bollin where chemical quality may be up to 4 General Quality Assessment (GQA) grades above the biological quality (See **Appendix 4**). This can be explained in part by the greater sensitivity of biological monitoring to toxic pollution. It may also be due to the fact that biological grades take into account the quality of the river habitat, which, in some of the area, is poor.

The aquatic invertebrates that are sampled to monitor the biological quality of our rivers, such as insect larvae, worms and crustaceans, do not move far and have reasonably long life cycles so that they reflect water quality over a relatively longer period of time. Although they respond to organic and toxic pollution, they are also affected by river habitat. Narrow walled channels that are present throughout the Mersey and Bollin catchments have less ecological niches for invertebrates than a more natural channel, which has space to meander, erode and deposit bed materials. There is also less variety in depth, flow, substrate and marginal habitats. By virtue of their upland nature and steep gradients many of the watercourses have good quality river gravels which provide a good habitat in the local context, but the invertebrate community is not as good as might be expected from the water quality. Sandy silty beds that typically form in downstream stretches with a lot of urban runoff and a more intensive maintenance regime provide a less stable and more uniform habitat.

The large number of culverts in the Chorlton Brook catchment impact on communities in a number of ways. The lack of light reduces food and oxygen by preventing plant and algal growth. A uniform dark riverbed in stale air is a hostile environment. Culverts fragment and isolate stretches of river. They affect the normal movements of invertebrates through downstream drift, some upstream movement and adults in flight. In addition to the poor habitat, culverts also make it very difficult to detect point source and diffuse pollution discharging within them.

Effects on Watercourse

- Increase in organic load.
- Elevation of biochemical oxygen demand/ammonia concentrations.
- Reduction in dissolved oxygen levels.
- Failure to comply with EU Directives.
- Reduction in diversity of aquatic flora and fauna.
- Lack of sustainable fish populations.

Examples

Water Quality Problems have been detected in the following watercourses in routine chemical and biological GQA monitoring and further investigation is required to identify the sources:

- Birkin Brook (Marthall Brook to Knutsford STW). Significantly failing to achieve its Long-Term Objective of RE2 and biologically GQA d.
- Pedley Brook (QSL at Peckmill Bottoms to Mobberley Brook). Significantly failing to achieve its long term objective of RE2 and biologically GQA e.
- Sinderland Brook (Fairywell Brook to Altrincham STW). Significantly failing to achieve its long term objective of RE3 and biologically GQA f.
- Sugar Brook (QSL at Hargreaves Bridge to Mobberley Brook). Significantly failing to achieve its long term objective of RE2 and biologically GQA d.
- Sinderland Brook (QSL at Portway to Fairywell Brook). Significantly failing to achieve its long term objective of RE2 and biologically GQA d.

The following stretches of watercourse have an impaired biological quality that is not detected through routine chemical monitoring:

- River Mersey (Stockport STW to Princess Parkway), bad biologically GQA f.
- River Bollin (Macclesfield Station to Weir), moderate biologically GQA d.
- River Dean (Rainow STW to Wilmslow STW), moderate biologically GQA d.
- River Dean (QSL at Lamaload Reservoir to Rainow STW), moderate biologically GQA c.
- Timperley Brook (QSL at Wellfield Lane to Sinderland Brook), bad biologically GQA f.
- Fairywell Brook (QSL at Whitecarr Lane to Sinderland Brook), poor biologically GQA e.
- Chorlton Brook (Cringle Brook to Mersey), poor biologically GQA e.
- Chorlton Brook (QSL at Tanyard Brow to Cringle Brook), poor biologically GQA e.
- Micker Brook (Poynton Brook to Mersey), poor biologically GQA e.

What is already happening

Some of the discrepancies in the comparison of chemical and biological data may be due to the current reporting method, chemical GQA is on a continual programme whilst biological GQA is currently carried out only on a five yearly basis. In this LEAP the chemical data is from 1998 and the biological from 1995. A review of the biological sampling of rivers is currently underway in the Agency.

Action	Responsibility		Total Cost (£K)	1999 /00	2000 /01	2001 /02	2002 /03	2003 /04	Future
	Lead	Other							
1. Improve understanding of reasons for not complying with long term RQOs.	Environment Agency (D Forster)		R	•	•	•	•	•	
2. Investigate watercourses where invertebrates are impaired that is not fully accounted for by chemical quality.	Environment Agency (A R Lee S Lever)		R	•	•	•	•	•	
3. Investigate where habitat improvements could improve biological quality and pursue where appropriate.	Environment Agency (A R Lee)		R	•	•	•	•	•	



ISSUE 6 – THE NEED FOR EFFECTIVE USE OF WATER RESOURCES TO REDUCE ENVIRONMENTAL IMPACTS

Background

Water is an essential resource used by agriculture, industry and for potable water supply.

Agriculture demand is generally met through direct abstraction from rivers, streams and groundwater. In addition to these options industry also uses water from the public water supply system to meet demand. This demand is generated by customers using water and losses through leakage from the distribution network.

Historically, water has been a cheap commodity for industry and an unlimited and uninterrupted supply is viewed as a right by domestic customers. These factors, together with the domestic charging scheme, have contributed to a culture of less than efficient usage of water and little recognition of its true value. The drought of 1995 – 1996 highlighted this problem and progress has been made to understanding the environmental effects of wastage of water. For agriculture the availability of water has not been an issue until the experience of the drought in 1995/1996. By introducing waste minimisation, demand management measures and effective agricultural use, the need for water can be reduced.

The level of leakage losses varies across North West region; however such leakage means that the system has to be oversupplied to ensure a secure supply to customers. At present NWW Ltd have 8 groundwater licences and 3 surface water licences within the Bollin catchment.

The Agency has stated that the water companies should address economic levels of leakage before any new abstraction licences are granted. Between 1992/1993 and 1997/1998 NWW Ltd achieved a total water leakage reduction of 358Ml/d; from 1997/1998 to 1999/2000 NWW Ltd have committed to achieving a further leakage reduction of 90Ml/d, however by March 1999 a reduction of 70 Ml/d had already been achieved, which is greatly supported by the Environment Agency.

Alongside NWW Ltd, the opportunity to encourage water management issues in the agricultural and industrial sector is being addressed, to ensure the sustainable use of resources throughout the Bollin catchment.

Effects

Low flows in the watercourses, especially summer, can have adverse effects in the aquatic environment.

Examples

Leakage from the distribution system means that the system has to be 'oversupplied' to ensure that a secure supply of potable water is supplied to customers. This 'extra' water has to be abstracted from surface reservoir and groundwater sources reducing the availability to other users and the environment as a whole. The Environment Agency has stated that water companies should achieve economic levels of leakage before any new abstractions are granted.

The depletion of water resources during the drought of 1995/1996 was felt heavily within the LEAP area. Drought Orders were in force on Teggsnose Reservoir. Water Resources can be affected within other areas affected by Drought Orders, most notably Windermere, Thirlmere, Ullswater and Haweswater reservoirs in the Lake District, which supply the Greater Manchester area, now being linked to the Macclesfield system for back-up supply. The extra demand on these sources can have noticeable effects on the water environment.

What is already happening

Spray irrigation seminars in conjunction with the National Farmers Union are arranged to promote irrigation good practice amongst the farming community.

PR literature has been produced to promote waste minimisation and demand management issues.

Action	Responsibility		Total Cost (£K)	1999 /00	2000 /01	2001 /02	2002 /03	2003 /04	Future
	Lead	Other							
1. Education and raising public awareness.	Environment Agency NWW Ltd		R	•	•	•	•	•	
2. Reduce wastage of water across the catchment.	Environment Agency NWW Ltd OFWAT		R	•	•	•	•	•	
3. Continue water demand management measures.	Environment Agency NWW Ltd Industrial Users		R	•	•	•	•	•	
4. Monitor effectiveness of demand management measures.	Environment Agency		R	•	•	•	•	•	
5. Promotion of efficient use of water resources in agriculture and winter storage reservoirs.	Environment Agency -Farming Community MAFF NFU		R	•	•	•	•	•	



ISSUE 7 – FALLING GROUNDWATER LEVELS

Background

The eastern part of the catchment is underlain by the major Permo-Triassic sandstone aquifer, forming part of the Manchester and East Cheshire aquifer unit. This is exploited for both public water supply and industrial purposes. It is necessary to understand and quantify both recharge to and discharge from the aquifer in order to develop a management strategy to ensure sustainable use of the available resources whilst protecting surface waters and environmental features which are dependant on groundwater.

Effects

Abstraction at rates in excess of natural recharge can result in falling groundwater levels and/or reductions in flows to watercourses.

Examples

Falling groundwater levels in the vicinity of Alderley Edge.

What is already happening

The region has produced a rolling programme for carrying out groundwater resource assessments, which has been built into a national strategy. The Manchester & East Cheshire aquifer unit has been included in the programme, starting 2000/01.

Action	Responsibility		Total Cost (£K)	1999 /00	2000 /01	2001 /02	2002 /03	2003 /04	Future
	Lead	Other							
Phase 1 Data collection and conceptual model.	Environment Agency (K Seymour)		100		•				
Phase 2 Development of numerical model.	Environment Agency (K Seymour)		75		•	•			



ISSUE 8 – IMPACT OF CONTAMINATED LAND ON THE ENVIRONMENT

Background

Land contamination may be present at many sites in the UK as a result of both current and previous activities such as waste disposal or industrial/ commercial use. Bringing contaminated land back into beneficial use helps to conserve land as a resource and reduces pressure on greenfield sites, thus conserving agricultural land and natural habitats. Redevelopment of such land provides an opportunity to remediate the contamination, and the Agency works closely with Local Authorities, developers, consultants and other organisations to ensure that the environment is protected and improved by redevelopment. However, in some cases serious pollution is occurring and a more pro-active approach is required.

Section 57 of the Environment Act 1995 contains important new provisions on the regulation of contaminated land in England, Wales and Scotland. It inserts a new Part IIA into the Environmental Protection Act 1990 and places a duty on local authorities to inspect their areas for the purposes of identifying land which falls within a new statutory definition of 'contaminated land'. Land formally designated as "contaminated land" is subject to a number of provisions intended to ensure unacceptable risks to health and the environment are remedied. Both local authorities and the Environment Agency have an important role to play in achieving this objective. It is anticipated that regulations will come into effect in December 1999.

Remediation of contaminated land, in general, costs substantial sums of money. Although polluters or landowners may be found liable and made to pay, overall progress is likely to be influenced by government policy and the availability of funding. Many contaminated sites are in public ownership as a result of abandonment. Such sites are frequently termed 'orphan' sites. Funding to investigate and remediate these type of sites is made available to the Agency through the DETR's Supplementary Credit Approval Scheme (SCA) where they are causing an impact to controlled waters, and to the Local Authorities where there is impact to human health.

The Agency will also seek to prevent and control new contamination occurring, for example, through Waste Management Licences and the Integrated Pollution Control Regime.

Effects

The possible effects typically associated with contaminated land include:

- Pollution of water resources (both surface waters and groundwaters).
- Impacts on human health (both real and perceived).
- Impacts on ecosystems e.g. toxic effects on aquatic and terrestrial ecosystems.
- Impacts on buildings and services e.g. contaminated water supplies, sulphate attack on concrete, landfill gas explosions.

In addition to these, there are the so called 'blight' effects such as:

- Loss of land/property value
- Inability or delay in selling property or land
- Loss of amenity
- Visual impact
- Difficulty in attracting development to the area
- Additional cost to redevelop sites

Examples

Hawthorn Lane Landfill, Sale (SJ 763 931)

This five hectare, pre-licensing landfill site is situated on the banks of the River Mersey. The owners of the site (Trafford MBC) have recently completed some major works to stabilise a section of the landfill, which was being eroded by the river. Concerns over possible leachate impact on the river are now to be addressed through a detailed site investigation, which is being funded by a joint SCA application between the Agency and Trafford MBC.

Former Altrincham Gasworks (SJ 777 877)

The Agency has been working with British Gas plc (Property Division) on the remediation proposals for the former Altrincham Gas Works at Welman House, Golf Road, Altrincham. The site includes a former landfill site and is being remediated to allow commercial and residential development.

Following an extensive site investigation, a number of areas of contamination have been identified on site including former tar tanks, tar settling and separators, purifiers and gas holders. Contamination is in the form of tars, tar contaminated soils and contaminated perched groundwater within some of the old gas works structure buildings. Remediation proposals have been agreed with the Agency and work is planned to start in late 1999.

Wellington Road North, Stockport (SJ 888 914)

Consultants on behalf of Elf Oil carried out a contamination investigation in 1997 after a petrol leak at this service station. The site is over the Sherwood Sandstone major aquifer. As a result, a remediation contractor was subsequently employed to install a dual extraction system in order to remove/treat contaminated groundwater and soil vapours in agreement with the Agency.

Action	Responsibility		Total Cost (£K)	1999 /00	2000 /01	2001 /02	2002 /03	2003 /04	Future
	Lead	Other							
1. Identify and initiate action on sites for redevelopment.	Site Owners, Developers	Environment Agency LA's	U	•	•	•	•	•	•
2. Undertake detailed site investigations. As part of redevelopment process.	Site Owners, Developers, Consultants	Environment Agency LA's	U	•	•	•	•	•	•
3. Remediation of sites for redevelopment.	Site Owners, Developers, Consultants	Environment Agency LA's	U	•	•	•	•	•	•
4. Update GDO database.	Environment Agency	LA's	15	•					
5. Identify and prioritise sites for possible SCA funding.	Environment Agency LA's		R	40	•	•	•	•	•



ISSUE 9 – THE ADVERSE ENVIRONMENTAL IMPACT OF UNAUTHORISED WASTE MANAGEMENT ACTIVITIES (INCLUDING FLY-TIPPING)

Background

The problem associated with flytipping is more prevalent within or near to urban areas. However, recent trends indicate that rural locations also suffer due to littering caused by day visitors who abandon food containers, wrappers etc. The favourite sites for flytipping waste are derelict premises (mainly used by commercial flytippers), car parks, verges, alleyways, public highways, and land adjacent to railway lines, rivers, lakes, ponds and canals.

Wastes, which are flytipped, fall into many various categories, and pose different problems to the environment. Demolition waste may contain hazardous materials such as asbestos or drummed chemicals, which may leak into and pollute the surrounding area. Incidents involving hazardous wastes cause much disruption to local residents, and the cost of removal and proper disposal of these items can run into thousands of pounds.

Domestic refuse, garden and DIY waste, unwanted furniture and domestic appliances are often flytipped by householders who either have no transport or are too lazy to attend their local civic amenity site, where such items can be disposed of free of charge.

Effects

- Detriment to the amenity of an area.
- Risk of environmental pollution.
- Risk of physical injury and harm to human health.
- High cost of cleaning up flytipped waste.
- Increased risk of flooding where waste is tipped in or near watercourses.

What is already happening

The Agency's Waste Regulation Enforcement Team investigates incidents involving illegal waste disposal activities. Information may be forwarded by Local Authorities, members of the public and Environment Agency officers active in the field.

Action taken in respect of incidents will vary depending on the scale of the problem and the potential or actual pollution, which occurred as a result of unlawful activities. The measures taken range from advice, enforcement notices, formal cautions and ultimately court action against offenders. During 1998 the Agency successfully prosecuted three cases involving the illegal deposit of controlled waste in the Mersey/Bollin area.

In an effort to combat the flytipping problem more effectively The Environment Agency and Local Government Association have agreed a Memorandum of Understanding to deal with flytipping incidents. The Memorandum of Understanding sets out a protocol between the Local Government Association and the Agency in respect of the response to incidents of flytipping in England and Wales, and is composed of three sections:

- a) the duties and powers of Local Authorities and the Agency;
- b) a response strategy; and
- c) an information strategy.

This protocol does not deal with the operation of organised illegal waste disposal sites (e.g. transfer stations and landfills operating without a waste management licence). Although the operation of such sites is an important issue requiring both Local Authorities and the Agency to work together.

The response strategy represents the national standard response of the Agency to incidents of flytipping. The Agency may respond above those standard responses to take into account local needs/problems but only where it has been separately agreed in writing by the Agency. Such an agreement must contain a clear statement as to why special arrangements are necessary for the Local Authority involved.

In addition to investigating flytipping incidents, the Environment Agency is currently carrying out a programme of work to regulate a number of waste disposal facilities that are operating illegally. Such sites are not licensed or registered as exempt as required by the Waste Management Licensing Regulations 1994. The unregulated sites are mainly scrap metal dealers and car breakers whose activities may pose a threat of pollution to the environment.

Action	Responsibility		Total Cost (£K)	1999 /00	2000 /01	2001 /02	2002 /03	2003 /04	Future
	Lead	Other							
1. Prompt regular clearance of flytipping material, attempt to recover costs.	LA's Environment Agency	Landowners Tidy Britain Group	R	•	•	•	•	•	•
2. Provide better information to all producers on proper disposal. Publicise effects and consequences of improper actions.	Environment Agency Waste Disposal Authorities LA's		R	•	•	•	•	•	•
3. Provide information in respect of disposal of household chemicals.	Environment Agency LA's	Manufacturers	R	•	•	•	•	•	•
4. Set up and encourage local initiatives to discourage illegal Activities.	Environment Agency LA's	Residents Police Community Groups	R	•	•	•	•	•	•
5. Restrict access to problem sites.	Landowner		U						
6. Greater priority to enforcement activity.	Environment Agency LA's	Police	R	•	•	•	•	•	•
7. Identify whether improved provision of civic amenity sites and collection services for problematical household wastes are required.	LA's	Environment Agency	R	•	•	•	•	•	•



ISSUE 10 – LACK OF AWARENESS AND IMPLEMENTATION OF THE GOVERNMENT'S STRATEGY FOR SUSTAINABLE WASTE MANAGEMENT (THE "WASTE HIERARCHY").

Background

The Government has set targets to recycle 25% of household waste by the year 2000, and to have easily accessible recycling facilities for 80% of householders by the year 2000. Currently only 7.5% of the nation's household waste is recycled. The average for this area is about 4.6% (1996/97 figures).

The Agency has a key role in delivering the sustainable waste management strategy at a local level, including the provision of information and statistics on waste production and management, and forming partnerships with appropriate interest groups to encourage local waste minimisation and recycling projects. Local authorities, being the waste collection authorities, have a duty to encourage recycling.

The implementation of the Producer Responsibility (Packaging Waste) Regulations 1997, will increase recycling activity in the area, by placing obligations to recycle and recover packaging waste directly on those who produce or use it. The Environment Agency is working with industry to secure compliance with the regulations as well as enforcing its provisions.

A more co-ordinated approach to waste minimisation and recycling issues is required to improve waste minimisation and the amount of waste recycled within this area. This should include partnerships between the Environment Agency, Local Authorities, waste producers and waste managers to promote and exchange information on the waste minimisation and recycling potential of the waste arising in the area.

Effects

- Wastes with a value to users of secondary materials, such as rubble, wood and metal, are being removed from the recycling chain and being unnecessarily disposed of.
- Increased financial burden on industry, commerce and householders through waste collection and disposal costs and the landfill tax levy.
- Large volumes of potentially recyclable household waste are deposited at landfill sites. These take up valuable voidspace that would be better used for wastes where the Best Practicable Environmental Option is disposal to landfill.

What is already happening

- Stockport MBC has initiated a kerb side collection of paper waste for householders, currently covering about 90% of households.
- Stockport Business Link is involved in a project auditing waste and resource management within small to medium sized enterprises.

Green Business Parks – A partnership between the Agency, English Partnerships, Groundwork Trust and local businesses. Agency funding will be used to investigate the potential for waste minimisation and pollution prevention. Within this LEAP area the focus is on Hurdsfield Industrial Park in Macclesfield.

Action	Responsibility		Total Cost (£K)	1999 /00	2000 /01	2001 /02	2002 /03	2003 /04	Future
	Lead	Other							
1. Identify the potential for setting up waste minimisation clubs in the area.	LA's Environment Agency, Business Links, Groundwork Trusts		R	•	•	•	•	•	•
2. Create working relationships with waste producers, waste collection and disposal authorities and reprocessors to promote the environmental and economic benefits of sustainable waste management.	LA's Environment Agency, Business Links, Groundwork Trusts		R	•	•	•	•	•	•
3. Raise the profile of the information held by the Environment Agency, to waste producers and waste managers, for example the Environment Agency NW Region South Area.	Environment Agency		R	•	•	•	•	•	•



ISSUE 11 – THE NEED FOR CONTINUED HABITAT IMPROVEMENT AND PROTECTION OF EXISTING WILDLIFE HABITATS TO CONSERVE AND ENHANCE BIODIVERSITY.

Background

When the UK signed the Convention on Biodiversity in 1992 at the Earth Summit it committed itself, amongst other things, to protect ecosystems and natural habitats and maintain viable populations of species. One of the means of doing this was to develop a national strategy that was endorsed by the Government in 1996. So far action plans have been drawn up for a short list of 116 of the most threatened and declining species and 14 key habitats. In 1998 a second list of 56 action plans was issued. To be implemented successfully these national targets will be translated into effective action at a local level through Local Biodiversity Action Plans (LBAPs). In 1999 (so far) 10 more national priority habitat BAP's, 75 new BAP's for plants and fungi and 103 new BAP's for invertebrates have been produced. This brings the total number of national species BAP's to 350. The total number of national habitat BAP's stands at 24 (referred to as national priority habitat BAP's).

Within the LEAP area the diversity of natural features and habitats, from moorland to meanders, hedgerows to haymeadows, ponds and ex-industrial reservoirs, need to be conserved and enhanced to sustain viable populations of wildlife species. Wetlands, bankside trees, riffles and pools in rivers all contribute to biodiversity.

A National Steering Group has now produced guidance on the production of LBAPs. The Greater Manchester Ecology Unit (GMEU), which advises the ten districts of Greater Manchester on wildlife and nature conservation, obtained approval through the Planning Officers Group and the Association of Greater Manchester Authorities, to produce a Local Biodiversity Action Plan for Greater Manchester on their behalf. This was in partnership with district officers, the statutory agencies, such as the Environment Agency and the voluntary sector.

At present an audit of existing known records of all plant and animal groups is taking place to identify species and habitats of national and local concern and highlight gaps and deficiencies in the existing data. Work has already started through the Greater Manchester Wildlife Working Group to identify species of conservation concern and a draft list has been produced for some species such as birds, mammals and higher plants. This audit would have been completed by January 1998 but was put back due to the delayed production of the North-West Regional Biodiversity Audit, which was issued in January 1999. It will be used to set priorities and targets for specific habitats and species.

A biodiversity audit with local action plans for the conservation of wildlife of the Cheshire region has been compiled, with partners, by the Cheshire Wildlife Trust. The programme, based on the best available scientific knowledge, will set out clearly the priority action required to conserve the most vulnerable plants and animals.

There is a need to continue to protect, improve and monitor existing habitats. This is already being done through the network of sites of nature conservation importance, such as Sites of Special Scientific Interest (SSSI), Sites of Biological Interest (SBI), Special Protection Areas (SPA) and Environmentally Sensitive Areas (ESA).

Effects

By creating new habitats and removing threats to existing habitats, species will be encouraged to achieve their target distribution and status.

The conservation of biodiversity will be a key indicator of the successful implementation of sustainable management in this area.

Examples

Species on the short list of globally threatened or declining species in UK Biodiversity Steering Group Report 1995 known to occur in the LEAP area include:

Otters

The otter population of the UK is slowly recovering from its 1950's decline as highlighted by the National otter surveys of 1985 and 1993. Although otters were once common and widespread in Cheshire, habitat removal and pollution contributed to a decline in the local population, and otters have been absent from most of their original range for some time. The Environment Agency/Wildlife Trusts are joint lead partners in delivering the National Otter BAP on a catchment/local level. The target of this BAP is to return breeding otters to all catchments where they were present in 1960, by 2010. The LEAP area has recent records of transient otter usage. The otters should be encouraged to stay and establish home ranges with a future aim of re-establishing a breeding population.

Great Crested Newts

Extensive terrestrial habitat is needed around ponds for feeding and hibernation. This is still found in some of the low intensity farming which characterise the rural fringe.

Water Voles

The water vole was once a familiar animal along watercourses and ponds throughout Britain. As a result of habitat degradation and non-native species predation, the water vole populations have declined and are now very localised and fragmented.

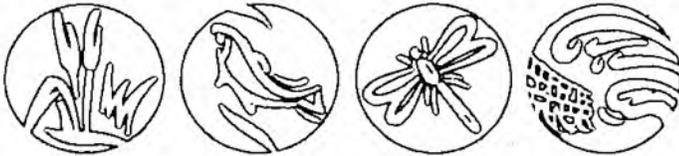
The Agency is the contact point for this flagship species. Significant areas associated with for example, upland reaches, provide suitable habitat from which recolonisation could occur when conditions downstream improve. Evidence of water voles in lower reaches of river systems has also become apparent within the area.

Black Poplars

The Black Poplar (*Populus nigra subsp betulifolia*) is thought to be the most endangered native timber tree in Britain. Roughly 250 trees are known to occur in the Cheshire region (between 10 and 15% of the national resource). Five trees have been identified so far in the catchment which have been verified, tagged and photographed and entered onto the Black Poplar database as part of the Black Poplar project. Cuttings have been taken from the trees at Manchester Airport and grown on to provide stock for future planting schemes within the catchment.

Key habitats for which costed Local BAPs will be drawn up in the next three years include canals, ponds and lodges, blanket bog, unimproved grassland, heathland, woodland and hedges. Ponds can have landscape, historic and cultural value as well as providing habitats for a wide range of flora and fauna. Mill ponds and lodges are a particular feature of this area.

Action	Responsibility		Total Cost (£K)	1999 /00	2000 /01	2001 /02	2002 /03	2003 /04	Future
	Lead	Other							
1. Continue to monitor the distribution and status of water vole and otters within the catchment in order to protect and enhance populations as and when funds become available.	Environment Agency, Cheshire Wildlife Trust	LA's, Local Wildlife organisations + Specialist Groups	0.5	•	•				•
2. Using survey and research information, identify sites, which are suitable for re-establishing populations of water voles, as resources become available.	Environment Agency (A R Lee)	Cheshire Wildlife Trusts, LA's	U	•					
3. Encourage the incorporation of Barn Owl and Bat boxes into new developments, as resources become available.	Environment Agency	LA's Cheshire Wildlife Trust, Hawk and Owl Trust, Developers	U	•	•	•	•	•	
4. Work in partnership with other organisations to protect and promote the restoration of vulnerable landscape features for example, the Cheshire Meres and Mosses (SEE ISSUE 13).	Environment Agency English Nature, Wildlife Trusts, GMEU, LA's		R	•	•	•	•	•	•



ISSUE 12 – IMPACT OF MANCHESTER AIRPORT RUNWAY 2 CONSTRUCTION ON THE AQUATIC ENVIRONMENT

Background

The construction of a second runway at Manchester Airport is a £172M project involving a range of complex engineering and environmental works. This includes diversion of the River Bollin through a 270m long tunnel, infilling part of the Bollin valley and river rehabilitation works downstream of the tunnel.

During the Public Inquiry in 1995/6 discussions took place between all functions of the National Rivers Authority (NRA predecessors to the Environment Agency) and Consultants working for Manchester Airport plc to ensure that Agency interests would be safeguarded as far as possible should Planning Permission be granted.

Negotiations led to agreements on such elements as:

- The dimension of the River Bollin tunnel to enable flood flows to pass through without raising flood levels in the area.
- Provision of access tracks through the tunnel to facilitate maintenance.
- Design of the channel to allow fish to move through the tunnel.
- Provision of a drainage system to prevent pollution from any spillages of fuel or de-icer and measures to attenuate the surface water run-off from the paved areas.
- A scheme of works to protect the aquatic environment as much as possible during construction works.
- An agreement in principle to carry out mitigation works on the channel of the River Bollin immediately downstream of the tunnel where works had been carried out in the past in connection with the extension of the existing runway.

As the government's environmental watchdog, the Agency continues to be heavily involved via a multi-disciplined project team at every stage of the three-year design and construction program.

The complex range of activities involved affect a wide range of Agency interests requiring many consents from the relevant functions e.g. land drainage consents, discharge consents and other environmental interests.

The runway 2 project has presented pollution problems typical of a large construction site. Large areas of ground have been stripped of vegetation cover and the movement of machinery and excavation has further disturbed the ground. These activities mean that at times of rainfall, solids can be readily washed off the site and into nearby watercourses. Drainage systems and settlement lagoons have been built to control this run off, and chemical dosing to aid the settlement of solids in the lagoons has been employed. In addition large quantities of fuel oil are stored with the risk of spillage and contamination. The Agency has worked with Manchester Airport plc and their contractors to reduce impact on water quality during the project and continues to monitor and inspect the site in order to ensure good site operation and seek further improvement if necessary.

On completion of the runway, run-off from the large impermeable surface area could have a significant detrimental impact on water quality. There is a significant risk of pollution, either as a result of accidental spillage or as a result of enhancement of background levels of a variety of contaminants such as oils, grease de-icing materials, sediments, tyre rubber and litter. To alleviate this problem the Agency has secured the provision of lagoons to intercept the runway drainage and enable diversion to foul sewer should the drainage be contaminated.

Effects

- Determination of all Land Drainage Consents through detailed discussions with all parties involved.
- Involvement in detailed design of the river rehabilitation along 700m of the River Bollin (land drainage consent required) downstream of the Bollin tunnel.
- Monitoring of on site drainage during construction phase against discharge consents and input to permanent drainage system.
- Environment Agency input required for the construction of a gauging station in the Bollin tunnel.
- Input to all detailed design to ensure fisheries interests of the Bollin are safeguarded and enhanced.
- Input to detailed design to ensure landscape and ecological aspects are considered, of all works where Agency interests are focussed.

Action	Responsibility		Total Cost (£K)	1999 /00	2000 /01	2001 /02	2002 /03	2003 /04	Future
	Lead	Other							
1. In collaboration with Manchester Airport plc, provide information to monitor future success of river re-habilitation downstream of the tunnel and undertake post project appraisal.	Environment Agency Manchester Airport plc		44K 6K	12K	18K	18K	18K		
2. Ongoing involvement in a pollution prevention strategy during construction work and when permanent works are in place.	Environment Agency AMEC – TARMAC Joint Venture		R	•	•				
3. Liaison with Airport contractors for the provision of a gauging station within the Bollin tunnel.	Environment Agency		8K						
4. Work in collaboration with other organisations to protect and promote the restoration of ecologically sensitive areas.	Joint Venture Environment Agency M/cr Airport plc. English Nature Nat. Trust Wildlife Trusts LA Planning		R						



ISSUE 13 – THE IMPACT OF NUTRIENT ENRICHMENT ON AQUATIC COMMUNITIES AND THE IDENTIFICATION OF ISSUES INVOLVED IN CONSERVATION MANAGEMENT FOR CHESHIRE MERES AND MOSSES

Background

Nutrient enrichment problems are thought to be affecting a number of waterbodies within the Bollin/Mersey catchment. These areas of open standing water support local, national and internationally recognised wildlife communities that can be detrimentally affected by a number of factors including occurrences of algal blooms. Algal blooms occur naturally but an excess of nutrients, principally phosphates that are usually in limited supply in freshwater ecosystems, increases occurrences. These blooms can be a serious threat to fish and other aquatic life as dissolved oxygen levels drop at night when algal respiration removes oxygen from the water. They can also lead to adverse effects on recreation, health and water treatment.

The Meres and Mosses are an internationally important series of open water and peatland sites in the North West Midlands. The Meres have developed in hollows formed during the retreat of the last glaciers and are often associated with a variety of wetland habitat types which show natural progressions from open water through to swamp and fen habitats to wet willow or alder woodland. The meres are particularly important for aquatic plants, insects, molluscs and birds that are dependent on open water habitats and fringing vegetation.

A large proportion of them are designated as Sites of Special Scientific Interest (SSSI) and many others are designated as Sites of Biological Importance (SBI) by the County Council and local wildlife trusts. There is one RAMSAR site within the catchment, which is designated as such because of its importance as a wetland with particular importance for birds.

The Environment Agency has a responsibility to protect and, where possible, enhance stillwaters in the region. A stillwaters strategy is being formulated whereby sites may be prioritised for action and resources focussed efficiently. A large database of information has been produced by the Environment Agency for sites larger than two hectares, which will be updated in the future to include smaller stillwaters in the area.

The Cheshire Meres are of particular importance in this LEAP area with many having national and international status due to the important species and habitats found at these sites. For example, Tatton Mere is designated as mesotrophic standing water and is under threat from pollution due to the narrow nutrient range by which it is typified.

Effects

It is important that eutrophic conditions are monitored to assess the full impact of nutrients on these waters and to implement management strategies, which will prevent an increase in these nutrient loads. The Environment Agency is embarking on a major study of the Meres and Mosses and their catchments in collaboration with English Nature. The study will encompass those natural wetland sites of glacial origin in the Meres and Mosses Natural Area which are notified as SSSIs with a number of connected sites also being included. The project will provide for each site the information necessary for effective conservation management and in some cases, enhancement and restoration of degraded communities.

Examples

- Rostherne Mere.
- Tatton Mere.

Action	Responsibility		Total Cost (£K)	1999 /00	2000 /01	2001 /02	2002 /03	2003 /04	Future
	Lead	Other							
1. Continue bio-chemical monitoring programme of selected Cheshire Meres as part of a still water strategy (i.e. Rostherne & Tatton).	Environment Agency English Nature		R	•	•				



ISSUE 14 – INVASIVE NON-NATIVE PEST SPECIES

Background

Many species of non-native plants and animals now live and breed in the wild in Britain. Some plants have spread from ornamental gardens where they were introduced in the 19th century. Giant hogweed, Japanese knotweed and Himalayan balsam have adapted particularly well to the difficult, often disturbed and polluted, urban environment and have come to dominate many stretches of river bank in the Mersey catchment. The River Habitat Survey (RHS), reported in 1998, has shown invasive weeds to be a major problem nationally, with 20% of the 5,600 sites surveyed registering at least one species. The Mersey catchment has been singled out for having all three species present in significant numbers. In the LEAP area, Japanese knotweed is spreading particularly rapidly both on riverbanks and away from water. Giant hogweed is widespread within the LEAP area. Some exotic plants, sold to provide oxygen in ponds and aquaria, have also found their way into water bodies having been discarded or deliberately introduced.

Some animals, such as signal crayfish and mink, have been introduced to the country and farmed for food or their skins. These have escaped into the wild or been deliberately released and now pose threats to native species.

The only species of crayfish native to Britain and Ireland is the white-clawed crayfish. The wellbeing of this species is being threatened by the continued spread of the non-native signal crayfish. Signals carry a virulent disease called the crayfish plague, compete for food and prey on the native species. There is no present method of eliminating crayfish plague once it is established, or of eradicating signal crayfish, which is the principal host of the plague causing fungus.

The American mink is a recent introduction to Britain, having escaped from fur farms and established itself along watercourses since the 1950s. There has been much concern about the effects of mink predation upon native animal species, particularly in relation to waterfowl and small mammals. The Agency accepts that there is evidence that mink may have a detrimental effect upon water vole populations, and may also cause problems at fish farms, hatcheries and in game/ornamental bird enclosures.

Effects

Native communities are out competed and can be lost completely.

Bankside plants

All three of the principal non-native species are fast becoming widespread throughout the entire Mersey catchment. At present there is an inadequate understanding and recognition of the problems and threats posed by them. Few, if any, of the local authorities have any policies in place for dealing with the situation and planning into the future. There is a need for policies to be incorporated into planning procedures and maintenance programmes on a grand scale. The transfer of ground material contaminated with plant is a widespread issue.

Japanese knotweed poses the biggest threat. It is a perennial plant that can grow through walls, tarmac and concrete. It can spread from small fragments of the extensive underground roots or rhizomes. Roots and foliage are readily carried downstream by water.

Himalayan balsam, is an annual that produces large quantities of seed in exploding capsules. Seed is transported along watercourses. Seed is also commercially available from garden outlets.

Giant hogweed is a perennial plant. It can take up to four years to produce seed, as many as 50,000 per plant. The Agency has had an ongoing area-wide spraying programme since 1995 to control and eradicate giant hogweed. Japanese knotweed and Himalayan balsam are more established but it remains important to prevent their spread.

A booklet 'Guidance for the control of invasive plants near watercourses' is available from the Environment Agency.

Effects

The tall dense stands these species form, shade and out-competes the native plant species and communities normally present, creating significant concern for various aspects of river management.

When the plants die down in winter, the resultant unvegetated riverbanks can become unstable and vulnerable to erosion. This can cause problems to flood defences and reduce channel capacity. Colonies on shoals and low banks act as traps for debris and encourage further sedimentation. Bankside inspection and maintenance is severely hampered and access to the river and to installations is impeded.

The conservation value of designated wildlife sites can be severely damaged by invasion. Unvegetated or sparsely vegetated silt, sand or shingle deposits along watercourses, that are important for specialised invertebrate communities, can become covered with any of the three species and stabilised, thereby reducing their ecological value. Himalayan balsam is a notable threat.

The recreational use of the river is hampered.

Giant hogweed carries a health and safety threat, as contact with the plant can cause severe irritation, swelling and painful blistering.

Oxygenating plants

Still waters such as ponds, ditches and canals are vulnerable to introduced plants such as *Crassula helmsii*, Australian swamp stonecrop (sometimes mis-labelled as *Tillea recurva*), *Myriophyllum aquaticum* known as Brazilian water milfoil, parrots feather or thread of life, *Lagarosiphon major* or curly pondweed and *Azolla* or water fern which is a small bright green or red floating plant. They all have the ability to take over from the resident native plants and most frequently appear in waters that have a high public interest in conservation areas. In some instances *Azolla* or *Crassula* can form growths that give the appearance of being solid mats which can be walked on. There is an obvious danger to safety when the "mats" are floating over a depth of water.

It is important that pre-emptive measures are taken to prevent further release of these species before they become too widespread and beyond control.

Effects

Native communities are out-competed. Neither *Crassula* nor Brazilian water milfoil dies back in the winter increasing their competitive advantage. The native communities can be lost completely.

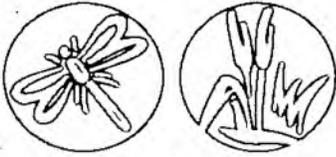
Large masses may cause de-oxygenation on warm nights resulting in the death of other aquatic organisms, in particular fish. The subsequent decay may also cause deoxygenation and nutrient enrichment contributing to the formation of algal blooms.

High densities of plant growth can impede the flow of water in drainage channels.

It is currently an offence to release any animal into the wild without a licence or to plant or cause to grow Japanese knotweed and Giant hogweed in the wild under the Wildlife and Countryside Act 1981.

Himalayan balsam and Crassula helmsii will also be added to Schedule 9 of the Wildlife and Countryside Act in a forthcoming review.

Action	Responsibility		Total Cost (£K)	1999 /00	2000 /01	2001 /02	2002 /03	2003 /04	Future
	Lead	Other							
1. Map the distribution of bankside invasive plants: Japanese Knotweed, Himalayan Balsam and Giant Hogweed when resources become available.	Environment Agency (P Younge)	Cheshire Wildlife Trust, Ranger Services, Landowners, General Public.	U	•					
2. Investigate the occurrence and extent of non-native pest species in rivers and enclosed waters in the area.	Environment Agency, LA's, Ranger Services, Landowners, General Public.			•					
3. Strengthen liaison with local authorities and other public service bodies to support the establishment of control policies in all LA areas.				•					
4. Carry out control programmes where appropriate.			30	•					
5. Collate information on distribution of all water-related invasive plant species (Azolla, Crassula, etc.)	Environment Agency (A R Lee)	Wildlife Trusts, LA's Ranger Services, Landowners, British Waterways.		•	•				



ISSUE 15 – CHANNELISED WATERCOURSES CREATING LOSS OF HABITAT, AMENITY AND LANDSCAPE CHARACTER

Many watercourses in this area have been artificially straightened, deepened and shortened. Land next to urban watercourses has often been developed in the past, right to the bank top. Banks have been reinforced or reprofiled to prevent natural erosion, silt deposition and meandering. Rural watercourses have been modified to create more land for agriculture and to drain land more effectively.

The Environment Agency, through its role as a statutory consultee on planning applications and through its own consenting powers, works to retain stretches of watercourse and river corridor which have a natural variety of features, for example, a meandering course, gravel shoals, riffles, pools, bankside trees and grasslands. We also seek to retain open watercourses and integrate buffer zones in new development sites to retain existing features of interest and promote opportunities for enhancement.

It is possible to enhance degraded watercourses by, for example, tree planting, creating wet margins or re-instating riffles and pools. In some areas it may be appropriate to restore meandering, semi-natural watercourses with floodplain habitats.

Effects

- Artificially straightened watercourses reduce the physical variety in the channel, banks and adjacent land. This reduces potential habitat for wildlife, including fisheries, due to the loss of meanders, vegetated and unvegetated marginal habitats, shoals, riffles, oxbows and valley landforms and there is less biodiversity due to a lack of bankside trees and plants, marginal and channel vegetation.
- They are less attractive watercourses for people to enjoy. Aesthetically, they are uninteresting, are less valued and need to be heavily maintained to retain their straight uniform profile.
- The loss of natural watercourses and bankside vegetation, including trees, reduces the landscape quality of an area and devalues its cultural heritage. Where development has taken place very close to the bank top, people may not even know a watercourse exists.

Examples:

The Environment Agency has carried out a river landscape assessment of the principal rivers within this area. It looked at the character of the river channel itself as well as the surrounding landscape. The assessment identified a management strategy for each stretch. The first strategy is to **conserve** the area. Conservation is needed in places where there is a good quality landscape with a strong character. The second strategy is **restoration**. Restoration is needed where the existing landscape has been to some extent degraded. The third strategy is to **enhance** a landscape. This is for areas that have completely lost their former character. In these types of landscapes there are opportunities to create new landscapes and radically change them for the better of the environment.

The landscape surrounding a river is also of concern to the Agency, as the river's setting will often dictate people's perceptions of the river. A river flowing through an attractive landscape with a strong landscape character will be valued more highly than a river that flows through a degraded landscape.

On the Mersey 19% of its landscape is in need of enhancement and 74% in need of restoration.

River Channel Landscape Assessment

River Mersey

Enhancement	97%
Restoration	3%
Conservation	0%

River Bollin

Enhancement	26%
Restoration	4%
Conservation	70%

The areas on the Bollin that were in need of enhancement are around Macclesfield and the section between the Bridgewater Canal and the Mersey.

River Valley Landscape

River Mersey

Enhancement	19%
Restoration	74%
Conservation	7%

River Bollin

Enhancement	7%
Restoration	19%
Conservation	74%

The Agency, however, has little influence in what happens in the wider landscape through which rivers flow and therefore the Agency would be looking for partners in which to help improve the surrounding landscape.

British Waterways have produced a Canal Corridor Study for the Ashton Canal which identifies potential improvements, including landscape and habitat improvement.

Action	Responsibility		Total Cost (£K)	1999 /00	2000 /01	2001 /02	2002 /03	2003 /04	Future
	Lead	Other							
1. Use existing landscape assessment and further studies. Identify stretches suitable for enhancement and restoration.	Environment Agency Local Authorities, Riparian owners	Groundwork Cheshire Wildlife Trust, Bollin Valley Project, Mersey Valley Partnership, GMEU, Mersey Valley Warden Service British Waterways.			•				
2. Implement enhancement and restoration schemes, as funds become available.	Local Authorities, Environment Agency	Groundwork, Cheshire Wildlife Trust, Mersey Valley Warden Service.				•	•	•	•



ISSUE 16 – LACK OF AWARENESS AND ACCESS FOR RECREATIONAL USE OF MANY OF THE WATERCOURSES OF THE AREA

Background

The historical urban development and industrial use of watercourses, in parts of this area, has resulted in buildings over, up to and facing away from the river with little space for amenity or wildlife habitats. This has created a history of pollution, channelisation, and what are perceived to be unattractive rivers with steep inaccessible banks, which may be littered with urban debris.

When old sites are redeveloped or renovated there is an opportunity to open up the river corridor, improve the river frontage and use the river as a focal point. If river walls and banks are lowered and landscaped with attractive terraces, river habitat enhancements and public access is created, their value is enhanced and they are less vulnerable to further abuse. Access improvements should also be considered for in-river recreational use.

Urbanisation of the area means that watercourses are crossed many times, however, many of the bridges have high parapets. A sign next to or on a bridge crossing is seen by passers-by and can be the prompt for a person to take a second look and enjoy a watercourse that it may not be possible to walk along. Many bridges are features of some historic or landscape value in themselves.

There are existing public rights of way and publicly owned or managed land through much of the area. However, open spaces are not always linked and the river corridors are fragmented making it impossible to walk along the watercourses. All local authorities in the area have a countryside or leisure service which undertake a wide range of work including improvements to river corridors. However, maintenance of recreational routes represents a significant workload and many are in poor condition or are not way marked.

The Macclesfield and Ashton Canals and their towpaths are important recreational assets and form key linear recreational corridors. There are opportunities to enhance the canal towpaths and these include linking towpaths to other existing routes.

It should be noted that it is not always desirable for footpaths to follow watercourses too closely or for the paths themselves to be too substantial. Sufficient room needs to be left to allow rivers to meander and erode their banks naturally. Additionally, in areas of particular conservation value, disturbance needs to be kept to a minimum.

The Environment Agency may require access to watercourses for maintenance purposes. However, this may be controlled access for recreation to prevent illegal flytipping. Recreational access should not restrict the ability of the Environment Agency to carry out necessary maintenance works.

Examples

- Sale Water Park (Mersey Valley Warden Service) – Interpretation boards needed.
- Ridgeway Reservoir (Peak District National Park Authority) – Improve footpaths (path re-surfacing, steps and handrail) and create a circular route around the reservoir.
- Macclesfield Forest (Peak District National Park Authority) – Improve eroded footpaths.
- Trentabank Reservoir (North West Water and managed by Cheshire Wildlife Trust) – Footpath improvement and interpretation boards.
- River Bollin at Prestbury Village Centre (Prestbury Amenity Society) – Footpath repairs following flooding.
- River Mersey (British Canoe Union) – Footpath improvement works along stretches of the river between Stockport and the Manchester Ship Canal.
- River Mersey (British Canoe Union) – Landing/launching points on Mersey at locations where access is difficult or weirs are impassable or dangerous.
- Bollin Valley Way (Bollin Valley Partnership) – Repairs to footpath and new drainage channels.
- Bollin catchment (Bollin Valley Partnership) – Footpath improvements and landscape remodelling (Handforth Road – NGR SJ 821 867).
- Bollin catchment (Bollin Valley Partnership) – Repairs to footpaths (Ross Mill – NGR SJ 789 853).

Effects

- Under use of an important recreational and educational resource.
- Wildlife and conservation value of rivers is dismissed and not appreciated.
- Worthwhileness of water quality improvements devalued.
- Lack of appreciation of historic and cultural significance of rivers.
- The under use of watercourses, leaves them open to problems such as fly tipping and vandalism, which together with pollution incidents go unreported if they are not seen or not perceived to be a problem worth tackling.
- More difficult to require the retention or creation of buffer strips or green corridors when sites are being developed.

What's already happening

Bollin Valley Rangers have identified where improvements to some footpaths are needed. The Environment Agency has donated £3,000 towards improvements to footpaths in the Bollin Valley.

Action	Responsibility		Total Cost (£K)	1999 /00	2000 /01	2001 /02	2002 /03	2003 /04	Future
	Lead	Other							
1. Raise awareness of the need for the creation of valley ways, linear parks and continuous spine footpaths. This will be via comments on planning and development proposals.	Environment Agency	Groundwork Trusts, Local Authorities, Countryside Agency, Peak & Northern Footpaths Society.	R	•	•	•	•		
2. Increase awareness of the existence, nature and purpose of watercourses. Example: The naming of watercourses at bridge crossings. (A)	Environment Agency	LA's, Highways Agency, Schools, Groundwork Trusts, Developers, Landowners & Businesses, British Waterways, Peak & Northern Footpaths Society.	U	•	•	•	•	•	•
3. Identify and implement strategic improvements to improve access.	Local Authority	As above	U	•	•	•	•	•	•
4. Promote river corridor access improvements as opportunities arise e.g. comments have been made on the flood alleviation scheme on the River Mersey.	Environment Agency, Local Authority	Highways Agency, Schools, Local Groundwork Trusts. Developers, Local Landowners, Businesses, Peak & Northern Footpaths Society	U	•	•	•	•	•	•

(A) This will happen as and when resources become available.



ISSUE 17 – IN-RIVER STRUCTURES CAUSING RESTRICTED FISH PASSAGE AND MIGRATION, AND REDUCED RECREATION USE

Background Information

Control of water level and regulation of discharge have historically been, and in some cases still are, necessary for the purposes of irrigation, water conservation, flood alleviation, to provide water for industry and in conjunction with locks for the purposes of navigation.

Most of the structures found in the Mersey/Bollin LEAP area are designed to hold water upstream. This may be considered to degrade the natural river environment.

Structures, such as weirs and sluices, can cause major obstructions to the migration of fish and to recreational users including canoeists and the users of other small craft. If fish are restricted from free movement within the river system they may be unable to migrate to their spawning areas. This may reduce spawning success and hence fisheries potential and sustainability.

Silt deposits can collect, covering coarse gravels upstream. This is particularly important for brown trout, within the Bollin area, which rely on these gravels for spawning.

Inappropriate new structures in the watercourse are discouraged. However, the replacement, or renovation, of existing weirs is sometimes necessary especially when a structure is considered unsafe. Where appropriate, replacement or renovated structures should incorporate passes or bypass channels, to allow fish migration and the passage of small watercraft therefore enhancing the fisheries and recreational potential.

Occasionally it may be possible to remove the structure altogether. In these cases the historical significance and the overall effect on the river environment, e.g. the beneficial oxygenating effects of weirs, must be considered.

Effects

- Limits fish migration and upstream spawning gravels.
- Dangerous and restricts access to recreational users.
- Disruption to natural river flow process.

Examples

A report on the River Mersey, from Stockport to Irlam, has been produced by the British Canoe Union, North West Branch. This report identifies issues at a number of weirs along this section, including Heaton Mersey Bleach Works, Northenden, Sale Ees, Carrington and Irlam. Some of these issues may be addressed within a proposed flood defence capital scheme on this section. It is also thought that weirs at Heatley and Styal on the River Bollin are obstacles to fish migration.

What is already happening

Routine monitoring of River Bollin and Mersey fish populations upstream and downstream of weirs as part of 5 year rolling programme (last conducted 1996 and 1999 respectively).

Action	Responsibility		Total Cost (£K)	1999 /00	2000 /01	2001 /02	2002 /03	2003 /04	Future
	Lead	Other							
1. Investigate and collate information on the existing structures, assessing the full impact on recreation, canoeing, rowing, fisheries. Prioritise and seek funding for restoration, enhancement or removal of in-river structures.	Environment Agency (A R Lee)	Local Authorities, Riparian Owners, British Canoe Union, NW Rowing Council, Sports Council, English Heritage, Angling Clubs.	U	•					
2. Initiate surveys to determine extent weirs are barriers to migratory fish species.	Environment Agency (A R Lee)	Landowners, Local Authorities	U	•					
3. Construction of fish passes at Warburton Mill and Quarry Bank Mill.	Environment Agency (A R Lee)	Landowners, Local Authorities	U		•	•			
4. Routine monitoring of fish populations upstream and downstream of the fish passes at Warburton Mill and Quarry Bank Mill to determine efficiency of fish passes.	Environment Agency (A R Lee)		R		•	•	•	•	•



ISSUE 18 – CULVERTS CAUSING FLOOD RISK AND LOSS OF HABITAT

Background

Culverts can prevent or impede the free flow of water and wildlife along watercourses.

In urban areas culverts can cause flooding to property due to inadequate capacity, blockage or collapse. In the case of blockage regular maintenance is carried out to keep them clear.

The detection of pollution is complicated when surface water systems discharge within culverts.

Culverts create a barrier to wildlife due to the lack of light, unnatural channel beds, and the interruption of river channel banks. The result is an inhospitable environment for fish, aquatic plants, invertebrates and mammals.

Culverts fragment the natural river corridor producing gaps in open water, riverbank and valleys. As well as having an adverse effect on ecology, this reduces the amenity value of the watercourse and therefore its value to the general public. As a consequence, the remaining open lengths of watercourse become vulnerable to further unsympathetic development.

Effects

- Loss of river habitats.
- Fragmentation of river corridor and its amenity value.
- Flood risks.

What is happening

The Agency's policy regarding culverts states that the Agency is in general opposed to the culverting of watercourses because of the adverse ecological, flood defence and other effects that are likely to arise.

The Agency will therefore only approve an application to culvert a watercourse if there is no reasonable practicable alternative or if the detrimental effects of culverting would be so minor that they would not justify a more costly alternative. In all cases where it is appropriate to do so adequate mitigation must be provided for damage caused.

Wherever practical the Agency will seek to have culverted watercourses restored to open channels.

NB – The Environment Agency National Policy Documents regarding Culverts were published in March 1999.

Action	Responsibility		Total Cost (£K)	1999 /00	2000 /01	2001 /02	2002 /03	2003 /04	Future
	Lead	Other							
1. Identify and gather information on all culverts suitable to be opened up when the opportunity arises. Section 105 Investigation (*)	Environment Agency, LA's. (P Younge)	Developers Owners	U U	 •	 •				
2. Identify possible river restoration schemes, where culverted watercourses can be "opened up". Promote and implement such schemes.	Environment Agency, LA's, Developers, Riparian Owners.		U						

(*) Section 105 Investigations aim to map the extent of 1 in 100 year return period floods (this means the areas likely to be flooded due to flooding that would statistically occur once in a 100 year period). Culverts that tend to significantly constrict these flood flows will also be identified during the investigation.

Flooding problems due to culverts with inadequate capacity have been identified on the following watercourses:

- Carrwood Park Brook at Robins Lane, Cheadle.
- Bruntwood Hall Brook, Cheadle.
- Chorlton Brook, Cheadle.
- Fairywell Brook, Altrincham.
- Timperley Brook, Altrincham.
- Gatley Brook, Gatley.
- Poynton Brook, Poynton.
- Spencer Brook, Prestbury.
- Poynton Park Brook, Poynton.

These culverts and others identified under the Section 105 Investigations will where appropriate feed into any relevant capital works schemes and the Greater Manchester Flood Defence Strategy (See Issue 20).

Every opportunity will be taken through the development control process to restore these culverts to open channel.



ISSUE 19 – FLOODING PROBLEMS

Background

The Environment Agency aims to reduce the risk to people and property of flooding from rivers and the sea. Due to urban developments having extended into the floodplains in the LEAP area, there are a large number of properties, which are at risk from flooding or are protected by flood defences.

The majority of existing flood defence works were constructed by and for the benefit of the riparian owners. They are responsible for maintaining these works so that they do not increase the risk of flooding to others. Where actual flooding has occurred the Environment Agency will investigate the causes of the flooding and consider exercising its permissive powers to reduce the flooding risk.

In assessing whether the risk of flooding is acceptable or not, the land use i.e. Density and type of development, and how often flooding is predicted to occur, is taken into consideration. The majority of "Main River" in this LEAP area passes through either "high density urban" or "medium density urban" areas where the target flood defence standards are for predicted flooding to occur only for 1 in 100, or 1 in 75, year flood events respectively. Where these minimum standards are not achieved the Environment Agency will consider the three following possible courses of action;

- Improvements to flood defences.
- Implementation or alteration of a maintenance plan.
- Development of Flood Warning Procedures for the affected area.

Possible courses of action are assessed by considering the "benefits" of each, in terms of prevented flood damages against the costs associated with implementing the action, together with the environmental impact of each. Priority is given to actions where the greatest benefit/cost ratio will be achieved. In certain circumstances the Environment Agency may take no action e.g. where a small number of properties are affected and insufficient benefits exist or where unacceptable environmental damage cannot be avoided.

Within the LEAP area the existing maintenance regime consists of both planned and emergency works which are undertaken to maintain current levels of service and minimise the impact of blockages and failure of defences. It involves works such as desilting, screen clearing and vegetation control. Individual maintenance activities are constantly reviewed to ensure that the benefits achieved exceed their cost, appropriate prioritisation of the available resources and any adverse effect on the environment is minimised.

Protection of the floodplain from inappropriate development proposals is achieved by encouraging Planning Authorities to restrict development in floodplains. To assist in the Planning process the Agency has developed a policy document "Policy and Practice for the Protection of Floodplains" and will provide flood risk maps to Planning Authorities in the near future.

Effects

Threat to life and property due to flooding, with consequential cost to society.

What is already happening

As well as the flooding issues being addressed under the ongoing capital works programme some of the flooding issues in this LEAP area came to prominence in 1998, when extensive flooding of private and commercial property took place following extreme and localised storm events. The towns of Macclesfield, Bollington and Prestbury, were particularly affected. Further investigations into the causes of flooding and potential measures designed to reduce flood risk are ongoing. Flood defence works can only be carried out where it is cost beneficial to do so (i.e. the cost of the work is less than the cost of the flood damage avoided by carrying out the works). Due to the limited flooding history in these locations, and the extreme nature of the events leading to the flooding, it is unlikely a major Capital scheme could be justified at these locations.

Greater Manchester Flood Defence Strategy (GMFDS)

The impetus for a strategic approach comes from the need to ensure sustainability of flood defences in a changing climate, under increasing development pressure and within environmental constraints. It must also be seen against the backdrop of increasing public expectations, decreasing resources and the many conflicting demands on the water environment today.

This strategy, which has a particular emphasis on urban Greater Manchester, is intended to provide a framework for developing, appraising and implementing flood defence works in a logical manner.

This will improve our approach to reducing flood risk where, for example, problems are extensive, complex or long term in nature, or inter-related with other problems. Multiple smaller problems will also be tackled in an integrated way (e.g. non-main river problems).

This approach will provide an effective framework for consultation in relation to flood defence for an area, which could be used to extend ownership of opportunities among interested parties.

Section 105 Investigation/Flood Plain Mapping

Section 105 investigation of the Middle and Lower Mersey catchments, which includes the Mersey/Bollin LEAP area is programmed for completion by September 2000.

These investigations aim to map the extent of 1 in 100 year return period floods (this means the areas likely to be flooded due to flooding that would statistically occur once in a 100 year period). Areas protected by flood defences but vulnerable to flooding from breaches or overtopping will also be identified.

Action	Responsibility		Total Cost (£K)	1999 /00	2000 /01	2001 /02	2002 /03	2003 /04	Future
	Lead	Other							
1. Section 105 Investigation to identify floodplain areas at risk from flooding.*	Environment Agency (P Younge)	Developers	U						
2. Capital Schemes planned for Mersey Bollin catchment.**	Environment Agency								
River Mersey Flood Alleviation Scheme.			9220	10	50			378	8782
Pott Shrigley Brook.			73						73
Sinderland Brook.			U						
Gatley Brook.			202						202

(*) Section 105 Investigations

These investigations aim to map the extent of 1 in 100 year return period floods (this means the areas likely to be flooded due to flooding that would statistically occur once in a 100-year period). Areas protected by flood defences but vulnerable to flooding from breaches or overtopping will also be identified.

() Capital Works planned for Mersey Bollin catchment**

River Mersey Flood Alleviation Scheme

Previous issues from the Upper Mersey CMP relating to the River Mersey between Brinksway at Stockport and Ashton Weir at Carrington will be addressed by this scheme including:-

- River Mersey – Waterside Hotel.
- River Mersey – Banks Rehabilitation.
- River Mersey – Northenden and Sale Ees Weirs.

Other Capital Works:-

- **Pott Shrigley Brook** – Undertaken feasibility study, select, design and construct the most favourable solution.
- **Sinderland Brook** – Complete the review.
- **Gatley Brook** – Undertake feasibility study, select, design and construct the most favourable solution.



ISSUE 20 – POOR ACCESS TO WATERCOURSES FOR MAINTENANCE WORKS

Background

There is poor access to watercourses at many locations within the area, which hinders regular and emergency maintenance works. This problem is most apparent in urban and urban fringe areas where walls, fences and buildings have been built at the edge of the watercourses. This legacy is mainly due to the rapid development, which occurred in the nineteenth century when society placed little value on the river environment and it became marginalised within the urban landscape and ruthlessly, exploited by industry.

Within the LEAP area the urban developments are on the natural floodplain of the area's rivers and the natural river channels have been extensively modified by the introduction of walls, culverts and weirs. Due to natural river processes of sediment transfer and illegal tipping in and adjacent to rivers it is necessary to undertake cleansing and dredging works to maintain existing standards of flood protection to the adjacent properties.

Due to the problem of gaining access the costs of undertaking planned and emergency maintenance works can be disproportionately high within the LEAP area. To offset this the current planned maintenance regime consists of infrequent visits during which extensive works are undertaken. As a result extensive damage to the river habitat can occur and between maintenance visits a reduction in flooding "standards of service" can occur. Significant ecological damage can also occur just by gaining access when it is necessary to move plant and labour along the river between existing points of access and the locations where the works are to be undertaken.

The maintenance liability and damage to the plant and animal habitats of the river caused by maintenance works would be significantly reduced by the provision of controlled access at locations where it is necessary to undertake regular maintenance works.

Effects

- Reduced efficiency of maintenance operations within watercourses in urban areas.
- Limited access available to undertake emergency maintenance during flood situations.
- Irregular but extensive maintenance of watercourses undertaken to offset high access costs.
- Poorly maintained stretches of watercourse reduce overall standards of flood protection.
- Unnecessary damage to the plant and animal habitats within the river environment.
- Poor recreational access (See Issue 17).

What is already happening

Under the Agency's Land Drainage Byelaws consent is required for any development, including planting, within 8 metres of the top of the bank of a main river.

Through the development control process the Agency also encourages local authorities, developers and landowners to provide a similar 8 metre access strip along non-main (or ordinary) watercourses.

All new schemes in the Capital Works programme ensure that suitable access for maintenance is incorporated within the scheme.

Action	Responsibility		Total Cost (£K)	1999 /00	2000 /01	2001 /02	2002 /03	2003 /04	Future
	Lead	Other							
1. Enforce flood defence byelaws and ensure working areas are not prejudiced in future.	Environment Agency	Local Authorities		•	•	•	•	•	•
2. Encourage Local Authorities to adopt a similar stance on ordinary watercourses.	Environment Agency			•	•	•	•	•	•
3. Improve access to the channel through development control as the opportunity arises.	Environment Agency, Local Authorities			•	•	•	•	•	•



ISSUE 21 – LACK OF KNOWLEDGE OF BUILT HERITAGE IS LEADING TO ITS DETERIORATION AND DESTRUCTION ALONG THE AREA'S RIVERS

The Mersey Bollin has a long history of continuous settlement. From around 8,000 BC hunter gatherers exploited the Pennines and areas such as Alderley Edge. Settlement continued and expanded with woodland clearance through the Neolithic Period, Bronze Age and the Iron Age with agriculture becoming the basis of the economy. The Romans occupied the area as did the Anglo Saxons although evidence of their existence is rather hard to find. In Medieval times the area continued to develop. Growth was, however, slow with large areas near Macclesfield coming under the harsh Norman Forest Law. From the 16th century the area became prosperous with many yeoman farmers and smallholders establishing successful farmsteads and hamlets. The textile industry also began to take off with Macclesfield becoming the centre of the silk industry. Towards Manchester, cotton and wool were important textiles. These textile mills have had a marked impact on the area's archaeology and were until the widespread use of coal particularly associated with rivers.

The area thus has a potentially rich built heritage. However, much archaeology in the area has been destroyed during the development of the Manchester conurbation. Other archaeological sites have been neglected and fallen into disrepair. An archaeological survey on the Roch Irk and Medlock rivers carried out by the Environment Agency increased the number of known archaeological sites within 10 metres of the river by 379%. There is therefore a danger that in areas where we have not carried out extensive surveys sites may inadvertently be destroyed by routine and heavy maintenance operations and by riverside development. If the Agency knows where important sites are we can modify our maintenance works to take this into account. Developments within 8 metres of main rivers require land drainage consent from the Agency, with a good knowledge of important archaeological sites we can highlight the issue to the site owner and local authority.

Examples

There are about ten roads in the Manchester area, which may reveal timber bridge remains wherever they crossed the areas rivers. Additionally a river may expose remains of the road itself through the process of meandering over the last 2000 years.

There are many medieval corn mill sites and 18 and 19th century textile mills are associated with the rivers. Some of these survive as standing buildings but others are only left as below ground remains, which are vulnerable to river erosion. Some of these sites are known but there may be many others that we do not know about. The industrial heritage element of the Mersey/Bollin area, particularly located by the waterside is itself an important recreational asset. However, there is a lack of information regarding the archaeological value of riparian sites. Further investigation is needed to assess the heritage potential of the area.

There are a number of sites within the Mersey/Bollin area which have been identified, but are deteriorating through natural processes or lack of maintenance. The potential of the built heritage, in the area, to attract recreational users and also to provide an educational resource is not being realised. This is aggravated by our poor knowledge of the area's archaeology. We need to identify sites not currently known to us. Identification will prove beneficial as such:

- It will enable us to implement preservation and development programmes for the sites.
- The sites can be incorporated in the planning system and made available within the Agency.

The Sites and Monuments Records need to be updated by survey work. This will quantify the archaeological resource within the area before we can take steps to protect the features.

Action	Responsibility		Total Cost (£K)	1999 /00	2000 /01	2001 /02	2002 /03	2003 /04	Future
	Lead	Other							
1. Archaeological Survey within 10 metres of Rivers Mersey and Bollin and other main rivers.	Environment Agency	GMAU, Cheshire County Council	10		•				
2. Manage the storage and manipulation of this data on the Agency's Geographical Information Systems and disseminate to other interested parties.	Environment Agency		U		•	•			
3. Investigate ways of preserving and/or developing the known sites and other new sites that come from the above survey.	Environment Agency	GMAU, Cheshire County Council, Local Historical Groups				•	•		
4. Use available archaeological records to identify and protect known archaeological remains.	Environment Agency	GMAU, Cheshire County Council, Local Historical Groups				•	•	•	•

4. A BETTER ENVIRONMENT THROUGH PARTNERSHIP

We cannot work alone to achieve protection and improvement of the environment. This section of the Plan explores areas where it is necessary to work in close partnership to achieve these goals. The partnership approach is an underlying theme of the LEAP process because, although we operate within an extensive regulatory framework, we have little direct control over the mechanisms, which determine land-use change, and hence, pressures on the environment. It is important for all parties that where interests overlap, discussion occurs on those areas of common interests. In this way action can be integrated, increasing efficiency, avoiding duplication and making the most of limited resources.

Organisations and Partnerships

Local Agenda 21

At the 1992 UN Earth Summit in Rio a unique global strategy was agreed, aimed at addressing both human poverty and environmental degradation. This strategy, called AGENDA 21, shares out tasks amongst different elements in society. For example local government was asked to work with local people to agree a Local Agenda 21 programme.

The Agency is committed to encouraging more sustainable lifestyles for all, through our work and in partnership with others. We are keen to develop closer relationships with local communities. Playing our part in Local Agenda 21 helps us to achieve this; we are already involved in advising a number of Local Agenda 21 groups on the state of their local environment.

In the Mersey/Bollin area, the Agency is involved in Cheshire's Sustainability Forum and task groups. The Agency has also helped in the establishment of a number of waste minimisation /environmental schemes.

Waste Minimisation and Environmental Schemes

There are now a number of organisations giving practical assistance to businesses in the form of waste minimisation clubs, waste exchange schemes, and business environment associations (BEAs). BEAs are established and run by local Groundwork Trusts. They aim to provide small to medium sized enterprises (SMEs) with advice and assistance in improving environmental performance, and a range of services are available including: confidential telephone helpline, regular bulletins, specialist seminars, environmental health checks, advice on environmental management systems and specialist training. In addition to Groundwork, organisations such as local authorities, Business Links and Training and Enterprise Councils (TECs) are involved in the delivery of a variety of projects and schemes, many of which are also supported by the Environment Agency.

North and Mid-Cheshire Focus Group – This is a 3 year pilot project supported by Business Link Warrington, Government Office for the North West and North and Mid Cheshire TEC. The Focus Programme (Funding Operational Change for Unlimited Savings) is designed for SMEs (10+ employees) and aims to boost profits by at least 10%. The system utilises a toolkit, which enables businesses to re-evaluate current processes and working practices. A joining fee is involved, and the scheme is available through Business Link Warrington.

Contact: Sandra Brusby, Warrington Business Link, Chadwick House, Warrington Road, Birchwood, Warrington WA3 6AE Tel: 01925 668000.

Cheshire Chambers Environmental Ltd (CCEL) – CCEL is a registered non-profit making environmental trust established by the Chambers of Commerce of Cheshire and North Wales to help SMEs improve their environmental performance. This demonstration project was launched in November 1999, and offers a free environmental review to all Chamber of Commerce members in Cheshire and North Wales.

**Contact: Alan Welsh, Hilliards Court, Chester Business Park, Wrexham Road, Chester CH4 9QP
Tel: 01925 411441**

Waste Initiative for Stockport (WISE) – The project, a partnership between Stockport Council and Stockport and High Peak TEC, is partly funded through the Department of Trade and Industry (DTI's) Local Competitiveness Challenge Fund. Participating companies can receive a free audit to identify waste saving strategies, and where substantial savings are identified, companies can take advantage of a subsidised consultancy to put savings into practice.

**Contact: David Phelps, Stockport and High Peak TEC, 1 St Peters Square, Stockport SK1 1NN
Tel: 0161 477 8830**

Green Business Parks Programme – The programme was initiated by Groundwork North West as a fresh way of helping business communities to address the issues that the modern-day environment presents them with. The first phase involved carrying out feasibility studies into the 'Green Business Park' concept on a number of estates throughout the North West. It has received funding from both the Environment Agency and English Partnerships as well as Groundwork's National Office.

The overall aim of the programme is to create locally 'owned' and sustainable Green Business Parks on a number of industrial estates throughout the North West. The key aims of a Green Business Park are to:

- Improve companies environmental performance and reduce negative environmental impacts.
- Minimise waste and pollution.
- Help companies achieve savings in utility, waste disposal and other costs.
- Build business support networks.
- Improve site security and safety.
- Enhance image.
- Develop inter company trading and sourcing.
- Strengthen community links.
- Help deliver Local Agenda 21.

One of the thirteen industrial estates included in the programme falls within this LEAP area that is the **Hurdsfield Industrial Estate in Macclesfield**. Initial work at Hurdsfield quickly resulted in the formation of a steering group, with participating businesses keen to be involved and attracted to the idea of working together. The steering group also includes representatives from Macclesfield Borough Council and the Environment Agency. To keep businesses informed of project progress, a newsletter for the estate has been circulated.

Contact: Roger Lamming (Environment Agency) Tel: 01925 840000

Mersey Basin Campaign

The Mersey Basin Campaign is the 25-year government backed partnership, which unites local authorities, businesses, voluntary organisations and government agencies to deliver water quality improvements and waterside regeneration throughout the Mersey Basin river system.

A major way that the Campaign is achieving its aims is through River Valley Initiatives. These are local partnerships between local authorities, businesses, community groups and government agencies which work within the aims of the Mersey Basin Campaign to identify and take advantage of the opportunities offered by their river for business, leisure and wildlife while tackling the problems of litter, pollution and neglect.

The work of voluntary organisations and schools is being developed by the Mersey Basin Trust, a registered charity with more than 550 members which provides grants, advice and information to individuals and organisations wanting to improve their waterside environment.

The efforts of the business community are being harnessed by the Mersey Basin Business Foundation, which brings together companies in the region to inject business ideas and practices as well as support and sponsorship.

The Campaign has a main support centre funded by the Department of the Environment. The Mersey Basin Campaign Administration Ltd promotes, manages and supports the Campaign effort including River Valley Initiatives.

Contact: Julie Mullen Tel: 0161 228 6924

Bollin Valley Partnership

The Bollin Valley Project was born in 1972, as an experiment, helping local people enjoy and care for the countryside just south of Manchester. With support from local and central government, private enterprise and local people, it expanded to cover the whole Valley. In 1998 it joined with the Bollin River Valley Initiative of the Mersey Basin Campaign and became the Bollin Valley Partnership (BVP).

BVP manages well over 100 miles of footpaths, several picnic sites, an information centre and country park and the Aviation Viewing Park. Works with landowners, farmers, schools, and individuals, improving woods, ponds, grassland and hedgerows, both for wildlife and their importance as part of people's local countryside.

Contact: Phil Robinson Tel: 01625 534790

Mersey Valley Partnership

The Mersey Valley Partnership is an environmental agency operating in the Halton and Warrington districts of North Cheshire. It is committed to conserving and enhancing the landscape, improving access to the countryside, increasing awareness of the environment and involving the community.

Jointly funded by Cheshire County Council, Halton Borough Council and Warrington Borough Council, and supported by the Countryside Agency, it seeks to achieve its objectives by working in partnership with the public, private and voluntary sectors.

Contact: David Potts Tel: 01928 573346

Red Rose Forest

Red Rose Forest was formally launched in June 1992 and is a partnership between the Countryside Agency, the Forestry Commission and the Metropolitan Boroughs of Bolton, Bury, Trafford and Wigan and the cities of Manchester and Salford. A wider partnership is actively involved in developing the Forest in many different ways across the Forest area. This partnership includes landowners, businesses, Government agencies, environmental and voluntary bodies, Countryside Warden Services, communities, schools and many individuals.

Over the next 40 years 25 million trees will be planted across 300 square miles of Greater Manchester, as the framework for a programme of regeneration and renewal that will take Greater Manchester into the next millennium.

Contact: Chris Waterfield Tel: 0161 872 1660

Mersey Forest

The Mersey Forest is the largest of twelve Community Forests in England. It was launched in 1991 with the idea of greatly improving the environment of Merseyside and North Cheshire. In November 1994, the Mersey Forest Plan was officially approved. Through the efforts of nine local authority partners, the Countryside Agency, the Forestry Commission and other key organisations, and with the support of a small team of professional staff, the Mersey Forest is now being planted and established at a rapid rate. Nearly two million trees have been planted over a hundred different sites. By 2025, woodland cover in the Mersey Forest will be increased to 20% above the national average.

Contact: Tel: 01925 816217

Cheshire Wildlife Trust

The Environment Agency works closely with the Cheshire Wildlife Trust (CWT). The CWT's Countdown Programme, part funded by the Agency since 1997, sets out the priority action required to conserve the most vulnerable plants and animals in Cheshire through setting targets and compiling Local Biodiversity Action Plans (LBAPs). The programme has already set out priority action plans for 38 species and 12 habitats. A great deal of new conservation action has arisen from the process with a number of LBAP groups being established to implement the actions set out in each plan. The Agency is a key partner in many of these plans and works to achieve their aims through both day to day work, LEAPs and project work when funding is available.

Contact: Gail Butterill Tel: 01270 610180

British Waterways

British Waterways runs over 2,000 miles of inland waterways and their related structures, and is committed to safeguarding their unique environment, while encouraging increased use and enjoyment of what the waterways have to offer.

The Cheshire Ring and the waterways that provide access to it form one of the most popular and best-loved parts of the waterway network. It combines the unique characters of seven different waterways, covering the full range of the great canal building age. A 19km length of the Macclesfield Canal and a 2km length of the Ashton Canal fall within this LEAP area and the Cheshire Ring.

It is our aim to work with partners in the public, private and voluntary sectors to achieve the greatest benefits from conserving and enhancing the waterways and their environs.

Contact: Sarah Ellison Tel: 01782 785703

Future Partnerships

We are currently involved in many projects and activities that rely on partnerships, and have established close links with many different organisations. New partnerships will be sought, and it is hoped that joint funding initiatives and joint ownership of projects will provide a more secure basis for environmental protection and enhancement.

Many of the issues included in this Plan cannot be resolved by us alone. Where other organisations are listed in the issues tables, we would welcome a partnership approach in order to help us resolve them effectively.

Regional and Area Environment Agency Committees

Each region of the Agency has three statutory Committees; members are drawn from Local Authorities, interest groups and prominent individuals. These Committees play a vital role in our relations with those affected by our work. They meet four times a year and the meetings are open to the public and press. The committees are:

Regional Environment Protection Advisory Committee

We are required to consult this Committee about proposals relating to the way in which we carry out our functions in the Region and we must consider representations made by the Committee. The chief role of the Committee is to identify issues of special importance to the Region, to act as a regional sounding board for ideas emanating from the Agency and our Policy Directorates and to help the Regional Managers to do their jobs by providing advice on matters arising in the Region. The Committee's general remit covers all aspects of the Agency's functions but it would not normally expect to concern itself with specific matters dealt with by the other committees.

Regional Flood Defence Committee

The chief role of this Committee is to advise us on the manner in which we discharge our duties in relation to Flood Defence in the Region and these duties will also include advising on all Conservation issues relating to the functions within its remit.

Regional Fisheries, Ecology and Recreation Advisory Committee

The chief role of this Committee is to advise us on the manner in which we discharge our duties in relation to Fisheries and Recreation in the Region and these duties will also include advising on all Conservation issues relating to the functions within its remit.

The South Area of North West Region also has five other Area based Committees or groups, which are:

Area Flood Defence Advisory Committee

The role of this Committee is to be receptive to local opinion on flood defence and land drainage issues. Also, to consider new flood defence capital schemes, proposed variations to the statutory Main River Map and other matters of a local nature and to make recommendations to the Regional Flood Defence Committee.

Area Environment Group

This group provides a communication link between the local community and the Agency, to advise the Area Manager on the local environment and provide a focus for the input into LEAPs.

Liaison Groups (Cheshire, Merseyside, Greater Manchester)

The Liaison Groups in South Area were established as a direct result of the large number of Local Authorities involved, and the restricted number of Local Authority representatives on the Area Environment Group.

The Groups provide a focus for effective liaison and working relationships between the Environment Agency and Local Government. They are non-statutory committees that are managed at an area level. Although there is no formal link to the Area Environment Group papers are exchanged between the groups.

Membership of the Groups comprise of elected Members (Councillors) and Local Authority and Agency Officers.

APPENDICES

APPENDIX 1 – DUTIES, POWERS AND INTERESTS OF THE ENVIRONMENT AGENCY

The Agency has a wide range of interests in the areas of water management, waste management and pollution prevention and control. While statutory duties and powers support many of these interests, much of our work is advisory, with the relevant powers resting with other bodies such as Local Planning Authorities. For example, the Agency is not responsible for:

- Noise problems (except if it is to do with our work).
- Litter (unless it is restricting the flow of a river or arising from waste management licensed sites).
- Air pollution arising from vehicles, household areas, small businesses and small industry.
- Collecting waste in your local area.
- Planning permission.
- Environmental health.
- Food hygiene.

These are all dealt with by the Local Authority who will liaise with the Agency if necessary.

The Agency is not responsible for the quality or supply of drinking water at the tap or for treating sewage waste, although we regulate discharges from sewers and sewage treatment works.

The following table summarises the Agency's duties, powers and interests and their relationship to land-use planning.

Agency Duty:	The Agency has powers to:	The Agency has an interest (but no powers) in:	Partnership:
<p>Water Resources</p> <p>The Agency has a duty to conserve, redistribute, augment and secure the proper use of water resources.</p>	<ul style="list-style-type: none"> • Grant or vary water abstraction and impoundment licences on application. • Revoke or vary existing licences to reinstate flows or levels to surface-waters or groundwater which have become depleted as a result of abstraction, and are subject to paying compensation to licence holders. • Secure the proper use of water resources through its role in water-resources planning, the assessment of reasonable need for abstractions and promotion of more efficient use of water resources. • Monitor and enforce abstraction and impoundment licence conditions. 	<ul style="list-style-type: none"> • The more efficient use of water by water companies, developers, industry, agriculture and the public and the introduction of water-efficiency measures and suitable design and layout of the infrastructure. 	<p>The Agency is committed to water-demand management and will work closely with water companies and developers, Local Authorities and relevant organisations to promote the efficient use of water. The Agency acknowledges that new resources may be needed in the future and supports a twin-track approach of planning for water resource development alongside the promotion of demand-management measures. The Agency seeks to influence planning decisions for new development by encouraging the inclusion of water-conservation measures in new properties, particularly in areas where water resources are under stress, and by ensuring that planning authorities allow for the lead time for resource development.</p>
<p>Flood Defence</p> <p>The Agency has a duty to exercise general supervision over all matters relating to flood defence throughout each catchment.</p>	<ul style="list-style-type: none"> • The control, through consenting of structures in, over or under main river watercourse (Water Resources Act, 1991 Section 109); structures on non-main river which affect the flow, including dams and culverts, (Land Drainage Act, 1991 Section 23); activities in on or within 8 metres of the bank of main river or adjacent to sea or tidal defences (land drainage byelaws). • Produce flood risk maps for all main rivers under S105 of Water Resources Act 1991. • Undertake maintenance works to main rivers using permissive powers. • Issue flood warnings to the public, Local Authorities and the police. • Carry out improvement works to reduce the risk of flooding. Various priorities and constraints need to be satisfied before any promoted scheme is implemented. 	<ul style="list-style-type: none"> • Granting of planning permission throughout a catchment but especially floodplains where development can significantly increase flood risk. This permission is granted by Local Planning Authorities. • Installation of surface water source control measures e.g. flood attenuation structures. • The maintenance of non-main rivers and the carrying out of other works not affecting their flow, which is a Local Authority remit, but may impact on main rivers. • Installation of buffer zones which reduce flood risk and have significant environmental benefits. • Urban and rural land use and measures that can reduce flood risk or the need for watercourse maintenance. 	<p>As a consultee on planning applications within floodplains, the Agency offers advice based on knowledge of flood risk. It also advises on the environmental impacts or proposed floodplain development.</p> <p>The Agency will encourage best practice, including source-control measures and common standards, among Local Authorities and riparian owners to protect and enhance the environment. The Agency works with the civil authorities to prepare flood-warning dissemination plans and supports their endeavours to protect communities at risk.</p>

Agency Duty:	The Agency has powers to:	The Agency has an interest (but no powers) in:	Partnership:
<p>Water Quality</p> <p>The Agency has a duty to monitor, protect, manage and, where possible, enhance the quality of all controlled waters including rivers, groundwaters, lakes, canals, estuaries and coastal waters through the prevention and control of pollution.</p>	<ul style="list-style-type: none"> • Issue discharge consents to control pollution loads in controlled waters. • Regulate discharges to controlled waters and into or onto land in respect of water quality through the issue and enforcement of discharge consents. • Prosecute polluters and recover the costs of clean-up operations. 	<ul style="list-style-type: none"> • The control of runoff from roads and highways. This is a Highway Agency duty. • The greater use of source-control measures to reduce pollution by surface-water runoff. • Prevention and education campaigns to reduce pollution incidents. 	<p>The Agency will liaise with Local Authorities, developers, the Highways Agency, industry and agriculture to promote pollution prevention and the adoption of source-control measures. As a consultee on planning applications, the Agency will advise Local Planning Authorities on the water-quality impact of proposed developments.</p>
<p>Regulation of Major Industry</p> <p>The Agency has a duty to regulate the largest, technically complex and potentially most polluting prescribed industrial processes (such as refineries, chemical works and power stations) under Part 1 of the Environmental Protection Act 1990.</p>	<ul style="list-style-type: none"> • To grant integrated pollution control (IPC) authorisations, which ensure that BATNEEC is used to prevent, minimise and render harmless releases to all media. • Take enforcement action for non-compliance with authorisations. 	<ul style="list-style-type: none"> • Smaller industrial processes which are not controlled by the Agency. • Developments in pollution prevention technology. 	<p>The Agency will liaise with industry when developing guidance on BATNEEC and BPEO.</p>
<p>Air Quality</p> <p>The Agency has a duty to have regard to the government's National Air Quality Strategy when setting standards for the releases to air from industrial processes.</p>	<ul style="list-style-type: none"> • To vary IPC authorisation conditions to require reductions in releases to air where these are making a significant contribution to the failure to meet air quality standards. 	<ul style="list-style-type: none"> • Releases to air from Local Authority controlled processes. • Control over vehicular emissions and transport planning. 	<p>The Agency provides data on releases to air from IPC processes and advice on planning applications to Local Authorities. The Agency wishes to liaise with Local Authorities in the production of their Air Quality Management Plans.</p> <p>The Agency will advise and contribute to the Government's National Air Quality Strategy.</p>
<p>Radioactive Substances</p> <p>The Agency has a duty under the Radioactive Substances Act 1993 to regulate the use of radioactive materials and the disposal of radioactive waste.</p>	<ul style="list-style-type: none"> • To issue certificates to users of radioactive materials and disposers of radioactive waste, with an overall objective of protecting members of the public. 	<ul style="list-style-type: none"> • The health effects of radiation. 	<p>The Agency will work with users of the radioactive materials to ensure that radioactive wastes are not unnecessarily created, and that they are disposed of safely and appropriately. The Agency will work with MAFF to ensure that the disposal of radioactive waste creates no unacceptable effects on the food chain. The Agency will work with the Nuclear Installations Inspectorate to ensure adequate protection of workers and the public at nuclear sites, and the HSE on worker-protection issues at non-nuclear sites.</p>

Agency Duty:	The Agency has powers to:	The Agency has an interest (but no powers) in:	Partnership:
<p>Waste Management</p> <p>The Agency has a duty to regulate the management of waste, including the treatment, storage, transport and disposal of controlled waste, to prevent pollution of the environment, harm to human health or detriment to local amenities.</p>	<ul style="list-style-type: none"> • Grant waste management licence and vary conditions. • Suspend and revoke licences. • Investigate and prosecute illegal waste management operations. 	<ul style="list-style-type: none"> • The siting and granting of planning permission for waste management facilities. This is conducted by the waste industry and Local Planning Authorities. The Agency, as a consultee on planning applications, can advise on such matters. 	<p>The Agency will work with waste producers, the waste-management industry and Local Authorities to reduce the amount of waste produced, increase re-use and recycling and improve standards of disposal.</p>
<p>Contaminated Land</p> <p>The Agency has a duty to develop an integrated approach to the prevention and control of land contamination ensuring that remediation is proportionate to risks and cost-effective in terms of the economy and environment. (pending new legislation).</p>	<ul style="list-style-type: none"> • Regulate the remediation of contaminated land designated as special sites. (pending new legislation). • Prevent future land contamination by means of its IPC, Water Quality and other statutory powers. • Report on the state of contaminated land. 	<ul style="list-style-type: none"> • Securing with others, including Local Authorities, landowners and developers, the safe remediation of contaminated land. 	<p>The Agency supports land remediation and will promote this with developers, Local Authorities and others.</p>
<p>Conservation</p> <p>The Agency has a duty to further conservation and enhancement of flora, fauna, geological or physiographical features of special interest when carrying out functions other than pollution control; and have regard to flora, fauna, geological or physiographical features when carrying out pollution-control functions; and promote the conservation of flora and fauna which are dependent on an aquatic environment.</p>	<ul style="list-style-type: none"> • The Agency uses its powers with regard to water management and pollution control to look for opportunities for furthering and promoting conservation. 	<ul style="list-style-type: none"> • The conservation impacts of new development. These are controlled by Local Planning Authorities. • Protection of specific sites or species, which is a function of English Nature. The Agency does, however, provide advice to Local Authorities and developers to protect the integrity of such sites or species. • Implementation of the UK Biodiversity Plan for which it is the contact point for 12 species and one habitat. 	<p>The Agency supports action to sustain or improve natural and man-made assets so that they are made available for the benefit of present and future generations. Many development schemes have significant implications for conservation. The Agency will work with developers, Local Authorities, National Park Authorities, conservation bodies and landowners to conserve and enhance biodiversity.</p>
<p>Landscape (Natural Beauty)</p> <p>The Agency has a duty to further conservation and enhancement of the landscape when carrying out functions other than pollution control; and have regard to the landscape when carrying out pollution-control functions; and promote the conservation and enhancement of the natural beauty of inland and coastal waters and associated land.</p>	<ul style="list-style-type: none"> • The Agency must further the conservation and enhancement of natural beauty when exercising its water-management powers and have regard to the landscape in exercising its pollution-control powers. 	<ul style="list-style-type: none"> • The landscape impact of new development, particularly within river corridors. This is controlled by Local Planning Authorities. 	<p>The Agency produces Design Guidelines, which it uses when working with Local Authorities, National Park Authorities, organisations and developers and in Areas of Outstanding National Beauty, to conserve and enhance diverse river landscapes.</p>

Agency Duty :	The Agency has powers to:	The Agency has an interest (but no powers) in:	Partnership:
<p>Archaeology</p> <p>The Agency has a duty to consider the impact of all of its regulatory, operational and advising activities upon archaeology and heritage, and implement mitigation and enhancement measures where appropriate.</p>	<ul style="list-style-type: none"> The Agency must promote its archaeological objectives through the exercise of its water-management and pollution-control powers and duties. 	<ul style="list-style-type: none"> Direct protection or management of sites or archaeological or heritage interest. Local Planning Authorities, County Archaeologists and English Heritage carry this out. 	<p>The Agency will liaise with English Heritage, Local Authorities, National Park Authorities, National Trust and other organisations, which have direct control over archaeological and heritage issues to assist in the conservation and enhancement of these interests.</p>
<p>Fisheries</p> <p>The Agency has a duty to maintain, improve and develop salmon, trout, freshwater and eel fisheries.</p>	<ul style="list-style-type: none"> Regulate fisheries by a system of licensing. Make and enforce fisheries byelaws. Promote the free passage of fish and consent fish passes. Monitor fisheries and enforce measures to prevent fish-entrainment in abstractions. Promote its fisheries duty by means of land-drainage consents, water abstraction applications and discharge applications. <p>Regulate the introduction of fish species to rivers and lakes.</p>	<ul style="list-style-type: none"> The determination of planning applications which could affect fisheries. 	<p>Many development schemes have significant implications for fisheries. The Agency will work with anglers, riparian owners, developers, Local Authorities, National Park Authorities and organisations to protect fisheries.</p>
<p>Recreation</p> <p>The Agency has a duty to promote rivers and water space for recreational use.</p>	<ul style="list-style-type: none"> The Agency contributes towards its recreation duty through the exercise of its statutory powers and duties in water management. 	<ul style="list-style-type: none"> Promotion of water sports. This is carried out by the English Sports Council and other sports bodies. 	<p>The Agency will work with the Local Authorities, National Park Authorities, Areas of Outstanding Natural Beauty, Countryside Agency, the English Sports Council, British Waterways and other recreational and amenity organisations to further the recreational use of the water environment.</p>

In addition to the above, the Environment Agency must have regard to:

- Any effect that proposals relating to any of its functions would have on the economic and social well being of local communities in rural areas.

APPENDIX 2 – GLOSSARY

ABSTRACTION LICENCE

A licence to abstract water issued by the Agency. The maximum annual, daily, and hourly abstraction rates are normally set within the terms of the licence.

AQUIFER (see MAJOR AQUIFER)

A layer of underground porous rock, which contains water and allows water to flow through it.

BIOACCUMULATIONS

The process by which a compound is taken up by an aquatic organism from water or through food and retained.

CHANNEL

A cutting in land along which a watercourse flows.

COMPENSATION WATER

Water released from a reservoir to maintain the flow required in the river.

CONFLUENCE

Point where two, or more, rivers meet.

CONTROLLED WASTE

Household, commercial or industrial waste from a house, school; university, hospital, residential or nursing home, shop, office, factory or any other trade or business. It may be solid or liquid, but not necessarily hazardous or toxic.

CULVERT

Covered channel or large pipe to carry water below ground level e.g. under a road, railway or building.

CYPRINIDS

The carp family of fish comprising some 200 freshwater species.

DEPOSITION

Where a river flows more slowly it may deposit gravel, sand and silt in its channel – often on the inside edge of bends or meanders.

DIFFERENT UNITS FOR FLOW MEASUREMENT

m³/s Cubic metres per second (cumec)

l/s Litres per second

MI/d Megalitres per day

mgd Millions of gallons per day

CONVERSION TABLE

m ³ /s	MI/d	mgd
0.016	1	0.22
0.080	5	1.10
0.116	10	2.20
0.320	20	4.48
0.580	50	11.00
1.160	100	22.00

DRIFT

Superficial deposits covering solid rock. Often deposited by rivers or by former glaciation in the form of boulder clay, peat or sands and gravels.

EUTROPHICATION

Enrichment of water by nutrients causing an accelerated growth of algae and higher forms of plant life to produce an undesirable disturbance to the balance of organisms present in the water and to the quality of the water concerned.

FAUNA

Animal life.

FLUVIAL

Adjective of rivers.

FRESHWATER FISH

For the purpose of the Salmon and Freshwater Fisheries Act 1975, fish other than salmon, brown trout, sea trout, rainbow trout and char.

GEOMORPHOLOGICAL FEATURES

Physical features of a river, which include meandering (winding) channel, gravel beds and shoals, oxbows, earth cliffs and river terraces.

HYDRAULIC CONTINUITY

The relationship between groundwater and surface water flow.

INCINERATION

Consume by fire and reduce to ashes.

Specialist high temperature incineration is the best option for many hazardous wastes, but for household and similar wastes, the main advantage is volume reduction. Expensive, but the heat may be recovered as an energy source.

INDICATIVE STANDARDS

Ministry of Agriculture, Fisheries and Food defined standards of flood protection according to current land use.

INVERTEBRATE

Animal without a backbone for example insects.

LANDFILL

The deposit of waste into or onto land, which can then be restored to some other use. The predominant method for the disposal of controlled waste in the UK.

LANDFILL GAS

Gas arising from the natural biological degradation of organic materials in landfill. It consists mainly of methane and carbon dioxide and can cause problems such as damage to crops and vegetation, and hazards such as risk of asphyxiation or explosion in confined spaces. Landfill gas may however be exploited as an energy source.

LANDFILL TAX

Introduced in October 1996, a tax paid by landfill operators to ensure that landfill costs reflect environmental impact, thereby encouraging waste reduction, reuse and recovery.

LEACHATE

Liquid containing material in solution, draining from the ground.

LOAD

A measure of the material carried by a river either in suspension or as dissolved material.

MAIN RIVER

Some, but not all, watercourses are designated as Main River. Main River status of a watercourse must first be approved by MAFF. The Environment Agency has the power to carry out works to improve drainage or protect land and property against flooding on watercourses designated as Main River.

MAJOR AQUIFER

Water bearing rocks, which are capable of yielding significant volumes of groundwater due to their high permeability and porosity.

MARGINAL

At the water's edge.

MESOTROPHIC

Water body containing a medium amount of nutrients e.g. nitrogen or phosphorus.

MINOR AQUIFER

Water bearing rock of limited extent, capable of supporting medium/small abstractions.

NON AQUIFER

Rock of low permeability containing little or no groundwater (may support very limited abstractions).

NON REAL TIME

Monitoring results, which are available at a date later than when the sampling took place.

OCHRE

Iron based orange discolouration.

PASTURE

Semi-improved and improved grazed grassland.

POOL

A deep, slow, flowing section of a river or stream.

PRECIPITATION

The total amount of water, which falls as rain, hail, or snow, expressed as mm or inches of rainfall over a specified period.

PRODUCER RESPONSIBILITY

A business-led approach, which may be underpinned by legislation, to achieve the reuse, recovery and recycling of waste.

REAL TIME

Monitoring results, which are available, when the sampling takes place.

RETURN PERIOD

The frequency within which, on average, an event of a certain severity may be expected to return (expressed in years).

REVETMENT

Regularly sized and shaped stones, timber or concrete blocks placed in an ordered fashion.

RIFFLE

A shallow, but fast flowing part of a river or stream.

RIPARIAN

Of, or on, the banks of a river.

RIPARIAN OWNER

Owner of land abutting a river or lake. Normally riparian owners own the bed of river to the mid point of the channel.

RIVER CORRIDOR

Stretch of river including its banks and the land close by.

SALMONIDS

Fish classified as belonging to the Salmon family, such as Salmon, Trout and Char.

SHOAL

A sand and/or gravel deposit at the edge of or within river channel.

SPECIAL WASTE

A strictly defined group of controlled wastes, which are considered to be particularly dangerous or difficult, usually by virtue of hazard or toxicity, and therefore subject to additional controls.

STRATA

Layers of rock.

SPATE

Very high flows, usually associated with rainstorms which may cause flooding. Spate flows naturally cleanse the river channel.

TOPOGRAPHY

Physical features of a geographical area.

TRANSFER STATION (Waste Disposal)

A licensed depot where controlled waste is stored and sorted for disposal or recycling.

TREATMENT

The physical, chemical or biological processing of certain wastes to reduce volume or pollution potential before recovery or disposal.

WASTE MINIMISATION

Reducing the quantity and/or hazard of waste produced.

WATER TABLE

The surface of a body of groundwater within the underground strata. The water table will fluctuate as a result of natural or artificial causes.

APPENDIX 3 – ABBREVIATIONS

AOD	-	Above ordnance datum
ADAS	-	Agricultural Development Advisory Service
AMP	-	Asset Management Plan
BOD	-	Biochemical Oxygen Demand
CMP	-	Catchment Management Plan
CSO	-	Combined Sewer Overflow
CSW	-	Contaminated Surface Water
DETR	-	Department of the Environment, Transport and the Regions
GDO	-	General Development Order
EG	-	European Commission
EO	-	Emergency Overflow
ESA	-	Environmentally Sensitive Area
EQS	-	Environmental Quality Standard
FWAG	-	Farming and Wildlife Advisory Group
GMEU	-	Greater Manchester Ecology Unit
GQA	-	General Quality Assessment
IFE	-	Institute of Freshwater Ecology
IPC	-	Integrated Pollution Control
LBAP	-	Local Biodiversity Action Plan
LPA	-	Local Planning Authority
MAFF	-	Ministry of Agriculture Fisheries and Food
NFU	-	National Farmers Union
NWW Ltd	-	North West Water Limited
OFWAT	-	Office of Water Services
PAH	-	Polycyclic Aromatic Hydrocarbons
QSL	-	Quality Survey Limit

RAMSAR	-	Convention on Wetlands of International Importance especially as Waterfowl Habitat (RAMSAR Convention)
RE	-	River Ecosystem
RHS	-	River Habitat Survey
RQO	-	River Quality Objective
SBI	-	Site of Biological Importance
SCA	-	Supplementary Credit Approval
SPA	-	Special Protection Area
SSSI	-	Site of Special Scientific Interest
SWQO	-	Statutory Water Quality Objectives
UDP	-	Unitary Development Plan
WML	-	Waste Management Licence
WwTW	-	Wastewater Treatment Works

APPENDIX 4 – RIVER QUALITY OBJECTIVES (RQOs)

The Agency has proposed strategic targets for water quality in all classified watercourses known as River Quality Objectives (RQOs). These provide a basis for taking management decisions to protect and improve the chemical quality of these watercourses.

Ultimately RQOs for different water uses will be set, however, currently only the River Ecosystem (RE) scheme has been developed. This sets standards relating to the chemical quality requirements for different aquatic ecosystems. Details of the required standards are contained in Table 1.

Short-term RE objectives are proposed, along with a date by which compliance will be achieved. These objectives must be achievable within a ten-year horizon of committed investment or by the actions of the Agency or others. Long-term RE objectives are also proposed which reflect the achievable aspirations for the water quality. Achievement of these objectives may take more than ten years and require currently uncommitted expenditure. A list of all the proposed RQOs for the Manchester City Council area is contained in Table 2.

The Agency seeks views from interested parties on the proposed short and long-term objectives during its Local Environment Action Plan (LEAP) consultation process. Where justifiable reasons exist, objectives may be amended during the annual review process. These objectives may be made statutory by direction of the Secretary of State but the timescale for implementation is uncertain at this time.

TABLE 1: RIVER ECOSYSTEM RQOs – WATER QUALITY CRITERIA

Class	Dissolved Oxygen (%sat) 10-percentile	BOD (mg/l) 90-percentile	Ammonia (mg/l as N) 90-percentile	Un-Ionised Ammonia (mg/l as N) 95-percentile	pH lower limit 5-percentile upper limit 95-percentile	Hardness CaCO ₃ (mg/l)	Dissolved Copper (µg/l) 95-percentile	Total Zinc (µg/l) 95-percentile
RE1	80	2.5	0.25	0.021	6 – 9	<10 >10 & <50 >50 & <100 >100	5 22 40 112	30 200 300 500
Water of very good quality (suitable for all fish species)								
RE2	70	4	0.6	0.021	6 – 9	<10 >10 & <50 >50 & <100 >100	5 22 40 112	30 200 300 500
Water of good quality (suitable for all fish species)								
RE3	60	6	1.3	0.021	6 – 9	<10 >10 & <50 >50 & <100 >100	5 22 40 112	300 700 1000 2000
Water of fair quality (suitable for high class coarse fish populations)								
RE4	50	8	2.5	–	6 – 9	<10 >10 & <50 >50 & <100 >100	5 22 40 112	300 700 1000 2000
Water of fair quality (suitable for coarse fish populations)								
RE5	20	15	9.0	–	–	–	–	–
Water of poor quality (which is likely to limit coarse fish populations)								

No Class: Water of bad quality (in which fish are unlikely to be present)

Table 1 – River Quality Objectives (RQOs)

River	Stretch	Length (km)	Short Term RE RQO	Long Term RE RQO
Mersey	Princess Parkway to Carrington PS	17.6	RE5 (1999)	RE3
Mersey	Stockport STW to Princess Parkway	8.9	RE5 (1999)	RE3
Mersey	Goyt/Tame Conf. to Stockport STW	3.7	RE4 (1999)	RE3
Sow Brook	QSL at Lymm Dam to MSC	2.1	RE4 (1999)	RE3
Bollin	Pedley (Birkin) Brook to MSC	9.9	RE4 (1999)	RE3
Bollin	Dean to Pedley (Birkin) Brook	17.7	RE4 (1999)	RE3
Bollin	Macclesfield STW to Dean	8.9	RE4 (1999)	RE3
Bollin	Weir at SJ 903 760 to Macclesfield STW	3.5	RE4 (1995)	RE3
Bollin	Macclesfield Station to Weir at SJ 903 760	3.5	RE4 (1999)	RE3
Bollin	Dane Moss tributary to Macclesfield Station	1.7	RE4 (1995)	RE3
Bollin	QSL at Langley to Dane Moss tributary	3.0	RE2 (1995)	RE2
Agden Brook	QSL at A56 to Bollin	2.1	RE5 (1999)	RE3
Birkin Brook	Mobberley Brook to Bollin	3.4	RE3 (1999)	RE2
Mobberley Brook	Mobberley STW to Birkin Brook	4.4	RE5 (1995)	RE3
Mobberley Brook	QSL Alderley Edge STW to Mobberley STW	6.0	RE5 (1995)	RE3
Blackburn Brook	Little Mere Outlet to Birkin Brook	4.1	RE4 (1995)	RE2
Rostherne Brook	QSL at Mere to Little Mere Outlet	1.1	RE5 (1995)	RE2
Birkin Brook	Tatton Mere Stream to Mobberley Brook	0.7	RE3 (1995)	RE2
Birkin Brook	Knutsford STW to Tatton Mere Stream	3.8	RE3 (1995)	RE2
Birkin Brook	Marthall Brook to Knutsford STW	1.6	RE4 (1999)	RE2
Pedley Brook	QSL at Peckmill Bottoms to Marthall Brook	5.5	RE4 (1999)	RE2
Tatton Mere Stream	QSL at head of Tatton Mere to Birkin Brook	4.7	RE2 (1999)	RE2
Marthall Brook	QSL at Marthall Lane to Pedley Brook	2.2	RE3 (1995)	RE2
Sugar Brook	QSL at Hargreaves Bridge to Mobberley Brook	4.8	RE3 (1999)	RE2
Cotterill Clough	QSL at Ringway to Bollin	1.4	RE4 (1999)	RE4
Dean	Wilmslow STW to Bollin	0.3	RE5 (1999)	RE3
Dean	Rainow STW to Wilmslow STW	18.5	RE2 (1995)	RE2
Dean	QSL at Lamaload Reservoir to Rainow STW	4.2	RE2 (1995)	RE2

River	Stretch	Length (km)	Short Term RE RQO	Long Term RE RQO
Spath Brook	QSL at Stanley Green IE to Dean	1.4	RE4 (1999)	RE3
Red Brook	Shirdfold Farm Stream to Dean	0.6	RE5 (1999)	RE2
Red Brook	QSL Redbrook Bridge to Shirdfold Farm Stream	1.6	RE3 (1999)	RE2
Harrop Brook	QSL at Bowerclough to Dean	2.8	RE2 (1995)	RE2
Pott Shrigley Brook	QSL at Industrial Estate to Harrop Brook	2.2	RE2 (1995)	RE 2
Shawclough Brook	QSL at Hurdsfield IE to Bollin	1.1	RE5 (1995)	RE3
Rosendale Brook	QSL at Lowerhouse to Bollin	2.5	RE3 (1999)	RE3
Sinderland Brook	Altrincham STW to MSC	5.9	RE5 (1995)	RE4
Sinderland Brook	Fairywell Brook to Altrincham STW	3.4	No short term RE RQO	RE3
Sinderland Brook	QSL at Portway to Fairywell Brook	7.6	RE4 (1999)	RE3
Timperley Brook	QSL at Wellfield Lane to Sinderland Brook	4.5	RE4 (1999)	RE3
Fairywell Brook	QSL at Whitecarr Lane to Sinderland Brook	4.3	RE3 (1999)	RE3
Old Eea Brook	QSL at SJ 7692 9423 to Mersey	1.7	RE5 (1999)	RE4
Stromford Brook	QSL at Sale WwTW to Mersey	0.9	RE5(1999)	RE4
Chorlton Brook	Cringle Brook to Mersey	4.5	RE3 (1995)	RE3
Chorlton Brook	QSL at Tanyard Brow to Cringle Brook	5.9	RE3 (1995)	RE3
Cringle Brook	QSL at Heaton Chapel to Platt Brook	4.8	RE3 (1995)	RE3
Fallowfield Brook	QSL at North Reddish to Chorlton Brook	4.7	RE5 (1999)	RE4
Gatley Brook	QSL at Heald Green Station to Mersey	4.2	RE3 (1999)	RE2
Micker Brook	Poynton Brook to Mersey	10.1	RE3 (1999)	RE2
Micker (Norbury) Brook	QSL at Norbury Hollow to Poynton Brook	2.8	RE3 (1995)	RE2
Poynton Brook	QSL at Poynton Bridge to Micker Brook	3.3	RE3 (1995)	RE2
Bridgewater Canal	Lymm (A6144) to Waters Meetings	18.5	RE3 (1999)	RE3
Ashton Canal	Peak Forest Canal to Robertsons	3.6	RE3 (1999)	RE2
Macclesfield Canal*	QSL at Peak Forest to Cowley	24.3	RE4 (1995)	RE4

*This stretch is included in the Tame/Goyt/Etherow LEAP and is reported here only for information.

Table 2 – Changes to Proposed Short Term River Ecosystem RQOs

River	Stretch	Previous Short Term RE RQO	Revised Short Term RE RQO	Reason for Change
Mersey	Princess Parkway to Carrington PS	RE4 (1995)	RE5 (1999)	Previous data was unrepresentative. Current data indicates that RE4 cannot be consistently achieved in the short term.
Mersey	Stockport STW to Princess Parkway	RE4 (1995)	RE5 (1999)	Review of data. Current data indicates that RE4 cannot be consistently achieved in the short term.
Mersey	Goyt/Tame Confluence to Stockport STW	RE3 (1995)	RE4 (1999)	Previous data was unrepresentative.
Sow Brook	QSL at Lymm Dam to MSC	RE3 (1995)	RE4 (1999)	RE3 is not perceived as consistently achievable.
Bollin	Pedley to Manchester Ship Canal	RE2 (2001)	RE4 (1999)	Review of data.
Bollin	Dean to Pedley (Birkin) Brook	RE3 (1995)	RE4 (1999)	Review of data.
Bollin	Macclesfield STW to Dean	RE3 (1995)	RE4 (1999)	RE3 is not perceived as consistently achievable.
Bollin	Weir at SJ903 760 to Macclesfield STW	RE3 (1995)	RE4 (1999)	RE3 is not perceived as consistently achievable.
Agden Brook	QSL at A56 to Bollin	RE4 (1995)	RE5 (1999)	Review of data.
Rostherne Brook	QSL at Mere to Little Mere Outlet	RE4 (1995)	RE5 (1999)	Review of data. Current data indicates that RE4 cannot be consistently achieved in the short term, unknown sources.
Birkin Brook	Marthall Brook to Knutsford STW	RE3 (1995)	RE4 (1999)	Review of data has indicated that RE3 cannot be consistently achieved in the short term.
Pedley Brook	QSL at Peckmill Bottoms to Marthall Brook	RE3 (1995)	RE4 (1999)	Review of data has indicated that RE3 cannot be consistently achieved in the short term.
Tatton Mere Stream	QSL at head of Tatton Mere Stream to Birkin Brook	RE3 (1995)	RE2 (1999)	Review of data.
Sugar Brook	QSL at Hargreaves Bridge to Mobberley Brook	RE2 (1995)	RE3 (1999)	Review of data indicates that RE2 is not consistently achievable.

River	Stretch	Previous Short Term RE RQO	Revised Short Term RE RQO	Reason for Change
Dean	Wilmslow STW to Bollin	RE3 (1995)	RE5 (1999)	Review of data.
Spath Brook	QSL at Stanley Green IE to Dean	RE5 (1995)	RE4 (1999)	Changed to reflect recent improvements in the water quality.
Red Brook	Shirdfold Farm Stream to Dean	RE2 (2001)	RE5 (1999)	Review of data. RE2 is not achievable in the short term.
Red Brook	QSL Redbrook Bridge to Shirdfold Farm Stream	RE2 (1995)	RE3 (1999)	Review of data. RE2 is not consistently achievable.
Rossendale Brook	QSL at Lowerhouse to Bollin	RE4 (1996)	RE3 (1999)	Changed to reflect improvements in water quality.
Sinderland Brook	Fairywell Brook to Altrincham STW	RE5 (1995)	No short term RQO	Review of data. Indications that RE5 cannot be consistently achieved in the short term.
Fairywell Brook	QSL at Whitecarr Lane to Sinderland Brook	RE4 (1995)	RE3 (1999)	Review of data indicates RE3 consistently achievable.
Old Eea Brook	QSL at SJ 7692 9423 to Mersey	No short term RQO	RE5 (1999)	Review of data indicates RE5 is now consistently achievable.
Fallowfield Brook	QSL at North Reddish to Chorlton Brook	RE3 (1995)	RE5 (1999)	Review of data, unknown sources restricting water quality to RE5 consistently.
Gatley Brook	QSL at Heald Green Station to Mersey	RE5 (1995)	RE3 (1999)	Review of data, recognising significant improvements in water quality.
Micker Brook	Poynton Brook to Mersey	RE2 (1995)	RE3 (1999)	Recognising that RE3 is more sustainable for the urban catchment.
Bridgewater Canal	Lymm (A6144) to Waters Meeting	RE2 (1995)	RE3 (1999)	Review of data. Recognising that RE2 is not consistently achievable.
Ashton Canal	Peak Forest Canal to Robertsons	RE2 (1995)	RE3 (1999)	Review of data indicates RE2 not consistently achievable in the short term.

Table 3 Changes to Proposed Long Term River Ecosystem RQOs

River	Stretch	Previous Long Term RE RQO	Revised Long Term RE RQO	Reason for Change
Mersey	Princess Parkway to Carrington PS	RE4	RE3	RE3 perceived as achievable in the long term.
Mersey	Stockport STW to Princess Parkway	RE4	RE3	RE3 perceived as achievable in the long term.
Bollin	Pedley (Birkin) Brook to MSC	RE2	RE3	Review of data and nature of catchment. RE2 not perceived as a consistently achievable objective.
Mobberley Brook	Mobberley STW to Birkin Brook	RE2	RE3	Review of nature of the catchment indicates that RE2 is unlikely to be achieved consistently.
Mobberley Brook	QSL Alderley Edge STW to Mobberley Brook	RE4	RE3	Consistent with short-term objective of RE3 after AMP3 improvements.
Spath Brook	QSL at Stanley Green IE to Dean	RE4	RE3	RE3 is perceived as an achievable objective in the long term.
Shawclough Brook	QSL at Hurdsfield IE to Bollin	RE4	RE3	RE3 is perceived as an achievable objective in the long term.
Sinderland Brook	Fairywell Brook to Altrincham STW	RE4	RE3	RE3 is perceived as an achievable objective in the long term.
Sinderland Brook	QSL at Portway to Fairywell Brook	RE4	RE3	RE3 is perceived achievable objective in the long term.
Timperley Brook	QSL at Wellfield Lane to Sinderland Brook	RE4	RE3	RE3 is perceived as an achievable objective in the long term.
Fairywell Brook	QSL at Whitecarr Lane to Sinderland Brook	RE4	RE3	RE3 is perceived as an achievable objective in the long term.
Fallowfield Brook	QSL at North Reddish to Chorlton Brook	RE3	RE4	Review of data indicates that this highly urban stream is unlikely to achieve RE3.
Bridgewater Canal	Lymm (A6144) to Waters Meeting	RE2	RE3	Review of data indicates that this stretch is unlikely to achieve RE2.

APPENDIX 5 – ASSET MANAGEMENT PLAN

Water Service Company capital expenditure is negotiated in talks between the Agency, the Office of Water Services, the Department of Trade and the Environment and the Water Services Association. The agreed programme of work is referred to as the Asset Management Plan (AMP). The Agency is involved in targeting investment towards environmental improvements, including water quality improvements. Improvements may be necessary to meet or maintain existing EC and domestic statutory obligations such as the Urban Wastewater Treatment and Freshwater Fish Directives. Non-statutory schemes are also considered if they are necessary to maintain or improve river water quality and produce positive cost benefit arguments.

AMP3 details expenditure planned for improvements which will be undertaken during the period 2000 to 2005. On 1st March 1999 the Environment Minister made an announcement outlining the improvements that will be carried out in AMP3. In the Mersey Bollin area this planned work included improvements to 67 combined sewer overflows and 12 wastewater treatment works.

Wastewater Treatment Works Identified for Inclusion in AMP3

- *Alderley Edge, Great Warford and Mobberley – improvements to bring about RE3 quality in Mobberley Brook.*
- *Altrincham – improvements to bring about RE4 quality in Sinderland Brook upstream of the Manchester Ship Canal.*
- *Hale – improvements to bring about RE3 quality in the River Bollin.*
- *Hawthorn View and Warford Terrace – improvement to achieve the 'Appropriate Treatment' as required by the Urban Wastewater Treatment Directive.*
- *High Legh – improvement to bring about RE4 in Agden Brook and advance towards achieving the long term objective of RE3.*
- *Rainow – improvements to maintain compliance with the EC Freshwater Fish Directive in the River Dean.*
- *Sale – improvement to bring about RE4 quality in Stromford Brook.*
- *Stockport – improvement to bring about RE4 quality in the River Mersey and advance towards the long term objective of RE3.*
- *Wilmslow – improvement to bring about RE4 quality in the River Dean upstream of the River Bollin and advance towards the long term objective of RE3.*

Combined Sewer Overflows Identified for Improvement during AMP3

<i>Location</i>	<i>Stream</i>
<i>Alderley Edge</i>	<i>Whitehall Brook</i>
<i>Poynton balancing tank</i>	<i>Norbury Brook</i>
<i>Off Adlington Road</i>	<i>River Dean</i>
<i>Rear Cartmel Close</i>	<i>River Bollin</i>
<i>Westminster Road</i>	<i>River Bollin</i>
<i>18/20 Beech Farm Drive</i>	<i>River Bollin</i>
<i>Sandle Bridge</i>	<i>Pedley Brook</i>
<i>Poynton Industrial Estate</i>	<i>Poynton Brook</i>
<i>Hibel Road cso, Macclesfield</i>	<i>River Bollin</i>
<i>Barnabs Road, Poynton</i>	<i>Poynton Brook</i>
<i>Bollin Walk, Macclesfield</i>	<i>River Bollin</i>
<i>Thoresway Road/Birchfield Road</i>	<i>Gore Brook</i>
<i>Princess Parkway/M63</i>	<i>River Mersey</i>
<i>Ashton Old Road/Manshaw</i>	<i>Moss Brook</i>
<i>Edge Lane/Wilbraham Road</i>	<i>Chorlton Brook</i>
<i>Mauldeth Road West</i>	<i>Chorlton Brook</i>
<i>Dickenson/Beresford Road</i>	<i>Gore Brook</i>
<i>Withington STW ps</i>	<i>River Mersey</i>
<i>Wilmslow Road/Brook Road</i>	<i>Leigh Brook</i>
<i>Stamford Street/Upper Charlton</i>	<i>River Mersey</i>
<i>Alderley Edge WwTW storm tanks</i>	<i>Whitehall Brook</i>
<i>Dunham Massey WwTW storm tanks</i>	<i>River Bollin</i>
<i>Sale WwTW inlet overflow</i>	<i>Stromford Brook</i>
<i>Sale WwTW storm tanks</i>	<i>Stromford Braok</i>
<i>Stockport WwTW inlet overflow</i>	<i>River Mersey</i>
<i>Stockport WwTW storm tanks</i>	<i>River Mersey</i>
<i>Wilmslow WwTW inlet overflow</i>	<i>River Dean</i>
<i>Wilmslow WwTW storm tanks</i>	<i>River Dean</i>

Location	Stream
Moss Lane/Acre Lane, Bramhall	Carr Brook
Robins Lane/Barley Drive	Carr Brook
Lumb Lane (o/s no. 53), Bramhall	Carr Brook
Bramhall Park (no 1)	Lady Brook & Micker Brook
D/s Cheadle Golf Course (was sta7)	Micker Brook
Carr Wood, Bramhall	Carr Brook
Travis Street/Hope Street Ambulance Station	River Mersey
Brinksway Bridge/Grenville Street	River Mersey
Wellington Road North/Crossley Road	Black Brook
Crossley Road/Westholme Avenue, Heaton	Black Brook
Heath Bank Road (off Billeys Lane),	Micker Brook
59d Turves Road, Cheadle Hulme	Tributary of Micker Brook
Rear 40 Ack Lane, Bramhall	Carr Brook
258 Councillor Lane, Cheadle	Tributary of Micker Brook
Carrington Lane	River Mersey
Manor Avenue/Firs Road	Stromford Brook
Chapel Lane, Hale	River Bollin
Carrington Road, Flixton	River Mersey
Oakfield Street, Altrincham	Timperley Brook
Stamford New Road	Timperley Brook
Woodcote Road, Timperley	Sinderland Brook
Flixton/Irlam Road junction	S.w. sys River Mersey
Flixton Road, Flixton	S.w. sys River Mersey
Manor Avenue/Carrington Lane, Sale	Stromford Brook
Golf Road, Altrincham	Timperley Brook
Manor Avenue cso & ps	Stromford Brook
R/o Walwyn Close, Stretford (edg)	River Mersey
Barrow Lane, Hale Barns drainage	River Bollin
Lime Tree Close (adj min. Rifle)	River Mersey
Brook Close, Timperley (Wellington)	Timperley Brook

<i>Location</i>	<i>Stream</i>
<i>Danefield Road, Sale</i>	<i>River Mersey (under M63)</i>
<i>Manor Avenue syphon</i>	<i>River Mersey</i>
<i>The Avenue syphon</i>	<i>River Mersey</i>
<i>Dane Bank Road</i>	<i>Slitten Brook</i>
<i>Rr No.16 Bridgewater Street</i>	<i>Slitten Brook</i>
<i>Opp No.60 Longbutt Lane</i>	<i>Tributary Sow Brook</i>
<i>Longbutt/Woodland Avenue</i>	<i>Tributary Sow Brook</i>
<i>Oughtrington Lane</i>	<i>Bridgewater Canal</i>

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