local environment agency plan

WEAR

CONSULTATION REPORT

JULY 1997

ENVIRONMENT AGENCY

YOUR VIEWS

Welcome to the Consultation Report for the Wear area which is the Agency's initial analysis of the status of the environment in this area and the issues that we believe need to be addressed.

We would like to hear your views:

- Have we identified all the major issues?
- Have we identified realistic proposals for action?
- Do you have any comments to make regarding the Consultation Report in general?
- Have you any other comments?

During the consultation period for this report the Agency would be pleased to receive any comments in writing to:

Environment Planner
The Environment Agency
Northumbria Area
Tyneside House
Newcastle Business Park
Newcastle Upon Tyne
NE4 7AR

All comments must be received by 31 October 1997

Further copies of the document can be obtained from the above address.

All comments received will be considered in preparing the next phase, the Action Plan. The Action Plan will build upon Section 1 of this Consultation Report by turning the proposals into actions.

Note: Whilst every effort has been made to ensure the accuracy of information in this Report it may contain some errors or omissions which we will be pleased to note

How to use this Consultation Report

The publication of this Consultation Report is an important stage in the Environment Agency's local planning process.

The aim of the process is to identify, prioritise and cost environmentally beneficial actions which the Agency and others will work together to deliver within the Wear area.

The Consultation Report provides a focus for the discussion of environmental issues with all interested parties.

Your views are important - we would like to hear your opinions - even if it is to say that you think a particular issue is important or that you support the plan and its objectives.

To make this report easier to use we have divided it into two main parts:

Part 1 identifies issues facing the local environment, and makes proposals for action to address those issues. It is on this section that we would most value your comments.

Part 2 provides the background information to support Part 1. It describes the Wear area, identifies uses and activities which are prevalent within the area and seeks to measure the environmental quality of the area against identified standards (where available).

We look forward to your involvement.

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Draft Vision for the Wear Area

Over 450,000 people currently live and work in the Wear LEAP area. We must work together to protect and improve the area's environment whilst allowing its sustainable use. We must ensure that future generations can appreciate living and working in the area and enjoy its landscape and wildlife.

Our vision is:

"A better environment in the Wear for present and future generations"

To do this we will:

- work with others in protecting and improving the environment when development takes place
- assist local authorities to protect and improve local air quality
- protect and improve water quality in the River Wear and on the coast
- protect groundwater from the risk of pollution
- work with others to minimise the effect of abandoned mines on the environment
- work closely with local authorities and others to secure the remediation of contaminated land sites in the Wear area
- promote cooperation within the waste management industry to reduce waste in the Wear area
- ensure that exempt waste activities do not cause pollution of the environment
- reduce illegal tipping through education of businesses, surveillance of offenders and liaison with local authorities
- promote best practice in industry relating to pollution prevention and waste minimisation
- work with farmers, foresters and their advisers to minimise the risk of pollution
- ensure co-operation between all Government agencies in the Wear area to ensure efficient use of resources
- protect and improve the coast in partnership with others
- reduce the risk and provide timely warning systems for people and property, against flooding from rivers and sea
- work with others to maintain and enhance the diversity of river and wetland habitats and their wildlife
- maintain, improve and develop freshwater fisheries in the Wear catchment
- promote the use of water and land associated with water for recreation
- generate environmental awareness in young people and understanding of how they can help to improve the environment for future generations

Part 1

Part 1 introduces the Environment Agency, describes the Wear area, identifies a number of issues facing the local environment, and makes proposals for action to address those issues.

1 Introduction

Welcome to the Consultation Report of the Local Environment Agency Plan (LEAP) for the Wear area. Similar reports have been published for both the Tyne and Cheviot and East Northumberland areas. These are available from the Agency at the address shown on the inside front cover of this report.

The boundaries used for the LEAPs follow the river catchment boundaries, therefore the Wear LEAP covers the catchment of the River Wear and its tributaries; the Tyne LEAP covers the catchment of the River Tyne and its tributaries; the Cheviot and East Northumberland LEAP covers the catchments of the Rivers Tweed (English section only), Aln, Coquet, Wansbeck, and Blyth, their tributaries and the northern coastal streams (see Map 1).

1.1 The Environment Agency

The Environment Agency for England and Wales was established in April 1996 when the Environment Act 1995 brought together the National Rivers Authority, Her Majesty's Inspectorate of Pollution, the Waste Regulation Authorities and several units of the Department of the Environment. The Agency is a powerful environmental regulator and provides a comprehensive approach to the protection and management of the environment by combining the regulation of activities that can affect the quality of land, air and water. Our vision is:

"A better environment in England and Wales for present and future generations"

"We will:

- protect and improve the environment as a whole by effective regulation, by our own actions and by working with and influencing others;
- operate openly and consult widely;
- value our employees;
- be efficient and businesslike in everything we do."

Our aims are:

- to achieve significant and continuous improvement in the quality of air, land and water, actively encouraging the conservation of natural resources, flora and fauna;
- to maximise the benefits of integrated pollution control and integrated river basin management;
- to reduce the risk and provide timely warning systems for people and property, against flooding from rivers and the sea;
- to achieve significant reductions in waste through minimisation, re-use and re-cycling and to improve standards of service;
- to manage water resources to achieve the proper balance between the needs of the environment and those of abstractors and other water users;
- to secure, with others, the remediation of contaminated land;
- to improve and develop salmon and freshwater fisheries;
- to conserve and enhance inland and coastal waters and their use for recreation;
- to maintain and improve non-marine navigation;
- to develop a better informed public through open debate, the provision of soundly based information and rigorous research;
- to set priorities and propose solutions that do not impose excessive costs on society.

We cannot achieve our main aims alone or solely by the use of our statutory powers. We also need effective liaison with local government, industry, conservation groups, the farming community, landowners and the general public.

We also take into account a number of **umbrella duties** which sit above existing legislation. The areas of conservation, cost and benefit, rural areas and pollution control are considered when carrying out all of our work.

1.2 The Local Environment Agency Planning Process

We must deliver our aims at a local level. We are therefore publishing Local Environment Agency Plans (LEAPs) to draw together various aspects of environmental management and planning at a local level. The plans are part of an ongoing dialogue between ourselves and other organisations involved in the protection and management of the environment. We will encourage the continuation of this dialogue.

The aim of the LEAP process is to identify, prioritise and cost environmentally beneficial actions which the Agency and others will work together to deliver within the Wear area. These will be brought together in an ***Action Plan*** *for the next five years.*

The LEAP process involves several stages:

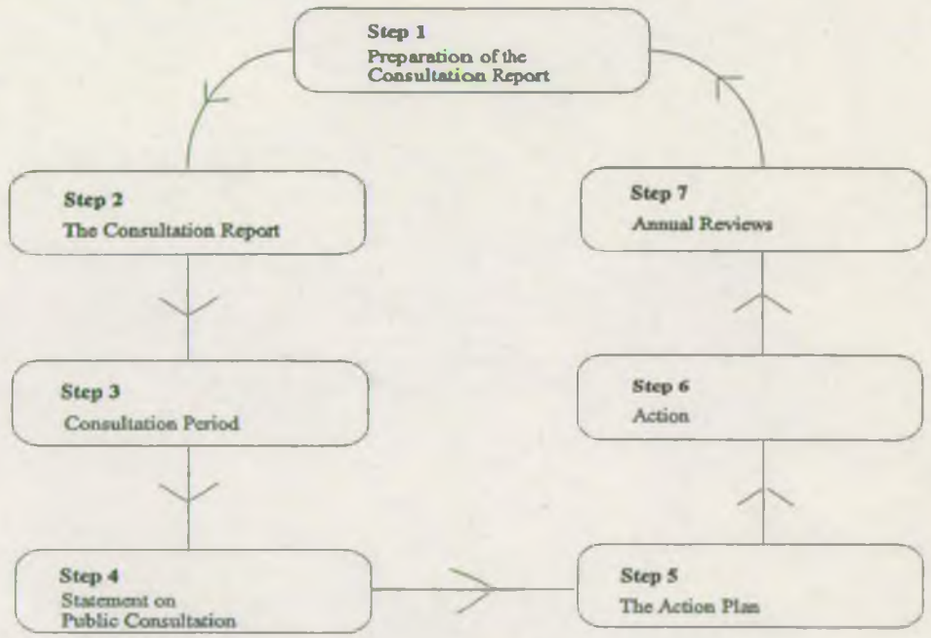


Figure 1 Diagram of the LEAP Process

Preparation of the Consultation Report

This Consultation Report has been produced by a team of Agency staff who work in the Wear area. In order to ensure a wide and balanced approach we have also involved Area Environment Group (AEG) members and consulted some of our key partners prior to publication.

The AEG is a local advisory group with members drawn from a wide range of community interests. They are:

Mr D G H Stewart	Northumberland Wildlife Trust
Mr I E Brown	Farmer
Mr D Stafford	Retail Manager and Angler
Cllr K Manton	Durham County Council
Cllr I C F Swithenbank	Northumberland County Council
Mr M Bird	North East Chamber of Commerce
Dr W Riddell	Chirex
Mr J B Aitchison	Alcan Smelting and Power
Mr J Graham	Northumbrian Water Limited
Mr G A Hornsby	Waste and Minerals Consultant
Mr G Gill	Forest Manager
Mr P Torday	Company Director/Tyne Fishery Riparian Owners & Occupiers Association
Prof P R Evans	Professor of Zoology, Durham University
Ms D Dowen	Environmental Lawyer
Mr H Shipley	National Land Reclamation Panel (Town Planner)
Mr I J Rutherford	Environmental Health Officer
Miss V A Brown	Coquet Shorebase Trust/Chair of Northern Region of British Canoe Union

We have also consulted some of our key partners prior to the publication of this report regarding their views on the issues which affect their particular area. The partners were:

Chester le Street District Council
City of Durham Borough Council
City of Sunderland Metropolitan Council
Countryside Commission
Derwentside District Council
Durham County Council
Easington District Council
English Heritage
English Nature
Forestry Authority
Forest Enterprise
Government Office for the North East
Ministry of Agriculture, Fisheries and Food
South Tyneside Metropolitan Council
Wear Valley District Council

The Consultation Report

This Consultation Report gives you the opportunity to comment on environmental problems and/or the work of the Agency. It:

- outlines issues where the Environment Agency and others need to take action to address problems in the environment;
- describes the environmental resources of the area;
- explains how these resources are affected by various uses, activities or pressures.

Consultees may wish to:

- raise additional issues not identified in the plan;
- comment on the issues and options identified in the plan;
- suggest alternative options for resolving identified issues.

We recognise that many of the issues and proposals for action identified by the Consultation Report will involve a number of organisations or individuals. Your views will be crucial to the preparation of the Action Plan.

Consultation Period

Anyone wishing to make comments on the LEAPs will be able to do so for a period of approximately three months. Comment should be made in writing by 31 October 1997 to the address shown on the inside front cover.

Statement on Public Consultation

At the end of the consultation period we will publish a statement which will give the results of the consultation process. The results will be taken into account when the Action Plan is produced.

The Action Plan

The Action Plan will be produced, by March 1998, following consultation, and will have regard to the comments received. Once produced, the plan will form a basis for future actions within the area for the next five years and will be a public document. It will detail the nature of actions required, take into account costs and benefits, identify timescales and partner organisations.

Action

Agreed actions will be incorporated into the annual business plans of the Agency and others proactive in environmental enforcement and protection.

Annual Reviews

Each year we will review the progress that has been made with the actions identified in the Action Plan and publish a brief review. We will also report on any major new issues which may affect the way we manage the environment in this area. Within five years of publishing the Action Plan we will undertake a major review of the progress made.

The review document will comprise the following information:

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

Local Environment Agency Plans and Catchment Management Plans

Over the last few years the National Rivers Authority, now part of the Environment Agency, produced Catchment Management Plans for the Wear, Tyne, Blyth, Wansbeck, Coquet, Ain, Till and the Northumbria Area Coast. The LEAPs will build on the success of the Catchment Management Plans and will integrate all the Agency's functions. The LEAPs will supersede the Catchment Management Plans.

1.3 Protection through Partnership

The Environment Agency is limited in both its resources and powers and can not work alone to protect and enhance the environment. Many other bodies and organisations also have responsibilities to the environment and a role to play in improving it. Partnerships in the form of pooled resources and expertise are often key to successfully addressing major challenges.

Collaboration can bring about environmental benefits, provide greater flexibility and release funding which would not otherwise be available. It can also bring in new skills to the Agency through working with external organisation, and may provide increased educational and promotional opportunities.

Three areas requiring co-operation and clear communication between the Agency and others are land use planning, Local Agenda 21 and partnership projects.

Land Use Planning

Development on previously undeveloped land, or the redevelopment of sites, whether for industrial or domestic purposes, has implications for the environment.

The majority of developments are controlled through Development Plans, published by local planning authorities under Town and Country Planning legislation. These strategic plans take the form of County Structure Plans, District Wide Local Plans and Unitary Development Plans, which set the context for development in land use, planning and transportation. They identify areas for future residential, commercial and industrial development, and set out the policies against which planning authorities consider development proposals and land uses. The Agency is a statutory consultee for these plans. Further details of our current and proposed involvement in land use planning matters are given in Issue 1 and Section 5.1 in Part 2.

Local Agenda 21

Sustainable development was given added impetus when the UK and other governments signed up to Agenda 21 at the Earth Summit in Rio in 1992. This is an environmental action plan for the next century, which recognises the central role of local authorities and the value of partnerships and the local community in achieving sustainable development.

Since the Earth Summit, local authorities have been charged with producing a Local Agenda 21 plan for their area. This document should encourage wider access to environmental information, greater community participation in decision-making and the adoption of sustainable development principles.

Local Authorities, industry, pressure/community groups and the Agency have established various Local Agenda 21 initiatives.

In the Wear area Local Agenda 21 initiatives are under way in Sunderland and County Durham.

In County Durham the County Council has established several Roundtables. They are:

- Waste Roundtable
- Energy Roundtable
- Natural Resources Roundtable
- Education, Participation and Awareness Roundtable
- Transport and Planning Roundtable
- Economic Sustainability Roundtable

The Agency supports the initiatives listed above and a regional initiative to share best practice between local authorities. We will also play a key role in providing information/data and expertise where required and where resources allow.

Partnership Projects

Many organisations influence the environment and therefore need to be partners in managing it. Lack of adequate funding for projects is often a problem, and can cause difficulties with long term initiatives. There are a number of routes to gain funding for partnership projects either through the European Structural Funds, or other National initiatives (such as the Lottery, Government Challenge Funds and Rural Action).

The objective of the EU Structural Funds is to address socio-economic differences within the European Community by increasing local economic diversity and the GDP. The Funds are administered by the local Government Office and the Ministry of Agriculture, Fisheries and Food (MAFF) through six 'Objectives' or a number of 'Community Initiatives', some of which are available only in certain areas of the UK. In the Wear area, funds which could be used for environmental improvements include Objective 2 funding for industrial areas in decline.

The 'Community Initiatives' are targeted at different social groups and communities. These include:

- RECHAR - for regeneration of areas affected by closure of the coal mining industry;
- KONVER - for areas heavily dependant on the defence sector;
- PESCA - for areas affected by the decline of the fishing industry.

Most of the European Union (EU) funds are applicable to certain areas which are defined by the appropriate administering body. (Further details can be obtained from the local Government Office).

The Agency is currently involved with a number of partnership initiatives using indirect funding. These include:

- Project Tyneside (waste minimisation - see Tyne LEAP).
- Northumbria Waste Minimisation Club (waste minimisation - see Cheviot and East Northumberland LEAP).
- The Newcastle Initiative Environmental Services Project (waste minimisation - see Issue 12).
- Easington Waste Minimisation Initiative (waste minimisation - see Issue 12).
- 'Turning the Tide' (regeneration of Durham Coast - Millennium Fund - see Issue 16).
- The Northumbrian RIVERS Project (application made to assist economic development in rural areas - see Tyne and Cheviot and East Northumberland LEAPs).

There is potential for the development of other joint initiatives. The Agency welcomes and encourages the formation of partnerships for projects with environmental benefits. The Issues shown in Section 3 highlight topics where we believe action is needed.

2 The Wear LEAP Area

The Wear LEAP covers an area of approximately 1,321 km^2 within County Durham, and Tyne and Wear. It includes the whole of the River Wear catchment, from Burnhope Moor in the Pennines to the estuary which flows through Sunderland, and the coastal stream catchments as far south as Castle Eden Dene. It contains the district councils of Wear Valley, Derwentside, Easington, Chester le Street, Durham City, City of Sunderland and parts of Teesdale and Sedgefield (see Map 1).

The population is concentrated in the eastern half of the area which includes Durham City, Sunderland City, Washington, Chester le Street and Bishop Auckland. In the upper catchment, a number of small rural towns are situated along the river corridor.

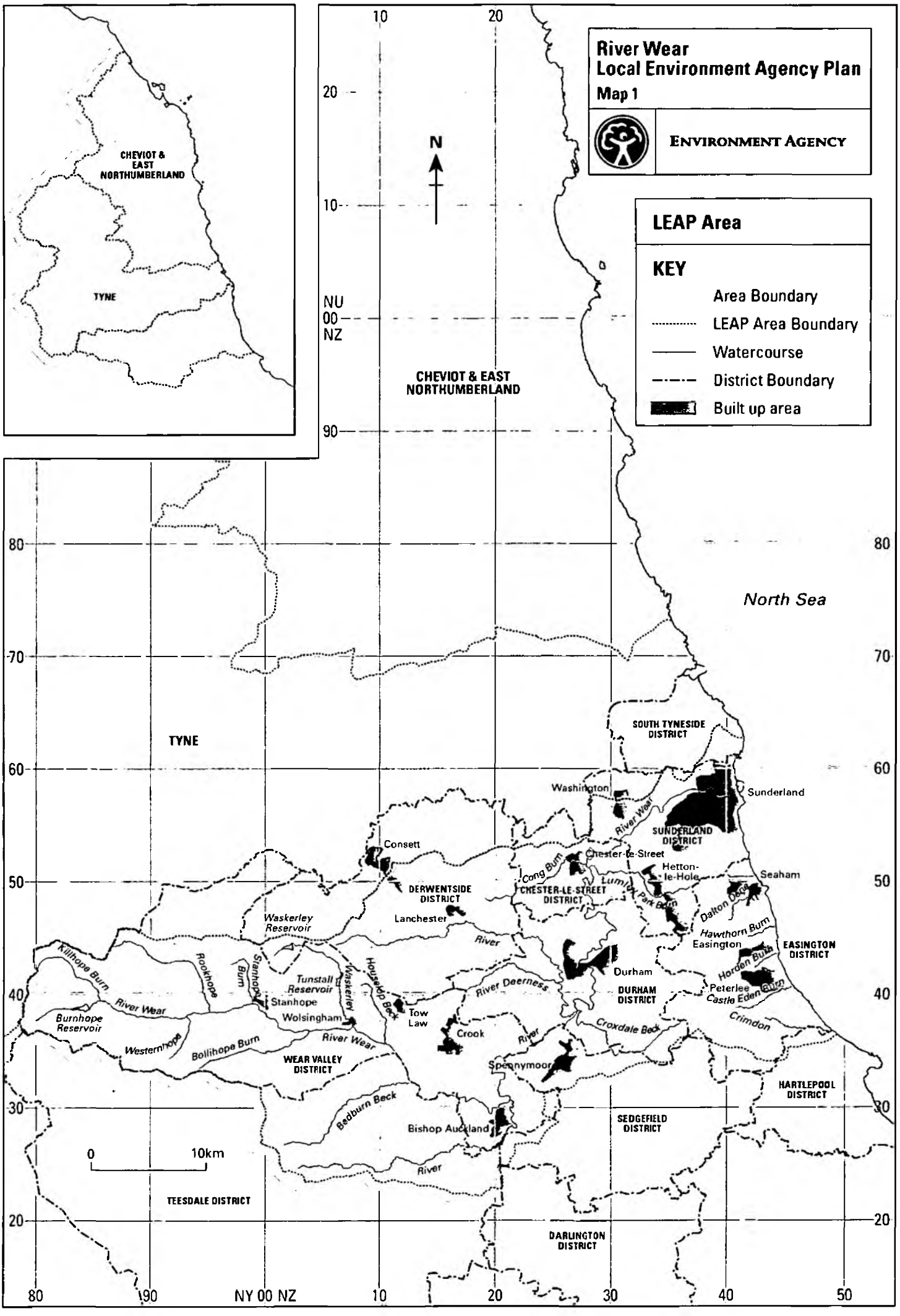
The character of the east part of the area is dominated by the presence of the coal seam in the underlying geology. Communities grew up and prospered by working coal mines across the area resulting in the scattered pattern of small settlements. Recently there has been a change from deep mining activities to opencast mining which extracts coal from near the surface. Since the cessation of deep mining activities, a change in the industrial output from the area to electronic and other light industry has occurred.

In the upper catchment the landscape is dominated by agriculture, mainly sheep farms on the moors, where grouse and other game birds also occur. The high quality of this landscape is recognised through its designation as part of the North Pennines Area of Outstanding Natural Beauty.

Along the coast there are two ports, Sunderland and Seaham, which deal with commercial traffic including fishing vessels and cargo ships as well as recreational users. The coast was dominated by the coal mining industry, with several deep mines extending out under the sea bed over significant distances. All the mines have closed, and the area is being developed as a recreational and tourist resource. There are a number of operations underway to clean up the beaches (from coal spoil), and a coastal footpath is being created along its length.

Within the area are a number of features of historical interest including buildings, archaeological sites, and monuments. Durham City is of particular note, as the cathedral and castle surrounded by the River Wear is designated as a World Heritage site.

The environment of the Wear LEAP area is diverse and varied. Some areas need improving and all areas need protecting. It is important that our natural resources are protected, and used in a sustainable way, and that environmental improvements are made where there are specific problems.


River Wear
Local Environment Agency Plan
Map 1
ENVIRONMENT AGENCY
LEAP Area
KEY
Area Boundary
LEAP Area Boundary
Watercourse
District Boundary
Built up area
CHEVIOT & EAST NORTHUMBERLAND
TYNE
N
NU 00 NZ
CHEVIOT & EAST NORTHUMBERLAND
North Sea
TYNE
SOUTH TYNESIDE DISTRICT
Washington
Sunderland
River Wear
SUNDERLAND DISTRICT
Consett
Chester-le-Street
Hetton-le-Hole
Seaham
Cong Burn
Lumley Park Burn
Dalton Dene
DERWENTSIDE DISTRICT
CHESTER-LE-STREET DISTRICT
Waskerley Reservoir
Lanchester
River
Hawthorn Burn
Easington
EASINGTON DISTRICT
Killhope Burn
Rookhope Burn
Stanhope Burn
Tunstall Reservoir
Waskerley Beck
Housekip Beck
Durham
River Deerness
DURHAM DISTRICT
Peterlee
Castle Eden Burn
Horden Burn
Stanhope
Tow Law
Burnhope Reservoir
River Wear
Wolsingham
Crook
Croxdale Beck
Crimdon
Westernhope
Bollihope Burn
River Wear
River
Spennymoor
WEAR VALLEY DISTRICT
HARTLEPOOL DISTRICT
Bedburn Beck
Bishop Auckland
SEDGEFIELD DISTRICT
0
10km
River
TEESDALE DISTRICT
DARLINGTON DISTRICT
NY 00 NZ

3 Issues and Proposals for Action

An aim of this Consultation Report is to highlight issues and propose actions to address them. The Agency has identified issues that require consideration by all those interested in the future of the Wear area by:

- comparing the current state of the local environment with national and regional targets;
- informal consultation with selected organisations;
- considering pollution incidents and complaints;
- using the local knowledge of Agency staff.

The objectives and proposals are the initial views of the Northumbria Area, North East Region of the Environment Agency and are not policy statements.

This part of the plan is the one where your comments are most valued. Please let us know whether you think the issues identified are the right ones, what you think of the proposals and whether we should examine any other options.

Each issue will be presented in the following format:

Issue What is the perceived problem.

Proposals We have set out, in tabular form, proposals to address the issue and the advantage or reason for the proposal.

Who's involved An indication of the groups and organisations who will need to be involved in resolving the issue.

Background Why we believe there is an issue to be addressed and what effect it is having, or could have on the local environment.

NB:

- Detailed Action Plans, outlining costs and timetables, will be established only after the consultation phase.
- Each issue should not be viewed in isolation. There are many links between them. We have grouped some issues to reflect the need to work closely with other organisations or sectors of society.
- All actions of the Agency must take into account a number of **umbrella duties** which sit above existing legislation. The areas of conservation, cost and benefit, rural areas and pollution control are considered when carrying out all our work.

Part 2

Part 2 describes the Wear area, identifies uses and activities which are prevalent within the area and seeks to measure the environmental quality of the area against identified standards (where available). It provides the background information to support Part 1.

Issue 1 Future Developments - Protecting and Enhancing the Environment

There is a continuing need for new residential, business and industrial premises within the Wear area. New development can affect the environment. This issue relates to how those involved in planning and carrying out developments can minimise the negative effects and maximise the positive effects these developments can have on the environment.

Objective

- To work with others to protect and enhance the environment when development takes place.

No	Proposals/Action needed	Reasons/Advantages
a	Take a proactive approach to development issues and work closely with inward investment agencies, major building firms, local planning authorities to promote and share best practice.	By working closely with local authorities and potential developers before planning applications are made, we can ensure that the best available techniques to protect and enhance the environment are incorporated at the planning stages of a development.
b	Encourage the local planning authorities to include policies in their development plans, including mineral and waste plans, which protect and enhance the environment.	Clear, concise policies in development plans will ensure developers take account of environmental issues at the planning stage.
c	Comment on individual development applications as they come into the Agency from local planning authorities and assess the take-up of comments made.	Ensures that the Agency's comments on individual planning applications are taken account of.
d	Assist in developing demonstration site/s of best practice in partnership with local authorities and developers. (Such a site is proposed in the Northern Development Area of Newcastle - Tyne LEAP).	Local demonstration sites would assist in sharing best practice and promoting sustainable development techniques such as 'source control'. However, funding such demonstration sites is difficult and requires all those involved to work in partnership (see Section 1.3).

Who's Involved

Local Planning Authorities, Government Office for the North East, inward investment agencies, major building firms, Environment Agency, Northumbrian Water Limited.

Background

The Government stated that approximately 24,000 houses need to be built in the Wear area before 2006. Most of these developments will be controlled through development plans which are published by local planning authorities under Town and Country Planning legislation. Individual development proposals are considered in relation to the approved development plan. The final decision on planning matters rests with the planning authorities. However, if the development involves water abstraction; impoundment or a discharge; work on or near a watercourse; the movement or disposal of waste; the undertaking of an industrial process; the introduction of fish to a watercourse, then appropriate consents or licences may be required from the Agency.

The watercourse system in particular is susceptible to changes in drainage patterns and diffuse pollution from development. Impermeable surfaces, such as car parks and roads, and modern drainage systems have significant consequences on the environment, principally:

- the removal of the natural filtering effect of vegetation and soil layers leads to reduced water quality;
- the increased rate of run-off leads to higher, more frequent flood flows in downstream areas.

There are several techniques and approaches that can help minimise the effect of development on the environment. These include techniques that infiltrate, filtrate and detain run-off which can minimise potential flood risk and maintain, or improve water quality. These techniques, collectively termed 'source control' or 'best management practice' (BMP), have the potential to make a major contribution to balancing development and environmental protection within the wider context of sustainable growth.

Development can have positive effects on the environment, including:

- redevelopment of previously used sites (sometimes called brownfield sites) can ensure that any contamination is dealt with safely;
- sympathetic landscaping on sites can increase native habitats for the benefit of wildlife;
- careful planning of any developments can improve the opportunities for leisure and recreation for local communities.

Local air quality can also be affected by development, particularly by exhaust emissions from cars (see Issue 2).

Further details on this topic can be found in Section 5.1 of Part 2.

Issue 2 Air Quality

Recent legislation and Government policy guidance reflects the increasing concern that is felt regarding the quality of the air that we breathe and the pollutants that we release into it. Local Authorities (LAs) have been given the responsibility of introducing Local Air Quality Management. The Agency only regulates discharges to air from large industrial processes (see Section 5.3).

Objectives

- To assist local authorities in the development and implementation of Local Air Quality Management (LAQM).

No	Proposals/Action needed	Reasons/Advantages
a	Actively assist LAs with Local Air Quality Management(LAQM). In particular: • provide information on air emissions from Part A regulated sites; • actively encourage LAs to cooperate on LAQM; • investigate the possibility of using Agency air quality modelling to assist LAs; • once the pilot areas have been set up, assist in sharing best practice with other LAs.	LAQM should, in theory, provide the local framework for action. Cooperation between the Agency and the LAs will ensure all sources of pollution to air will be taken into account. Cooperation between the Agency and LAs will ensure that the cost of setting up LAQM is minimised.
b	To develop and apply, where needed, biological techniques to effectively monitor air pollution from specific sites.	Monitoring of sites, before and after implementation of improvement programmes, will indicate if improvement programmes have had the desired effect.

Who's Involved

Local Authorities, Environment Agency, industry.

Background

The Government's approach to air quality management has centred around two themes:

- Firstly the development of a national strategy that will set overall objectives for the levels of specified pollutants, based on cost and benefit.

- Secondly, where any of the objectives prescribed are not being achieved or are not likely to be achieved by the year 2005 within any part of the authority's area, the local authority concerned has to designate part of its area as an Air Quality Management Area (AQMA). A plan covering the designated area then has to be prepared setting out how the authority intends to exercise its powers in relation to the designated area, to achieve the prescribed standards or objectives. Some local authority areas have been set up as pilots to review the DoE Guidance, and to consider and anticipate problems in achieving the objectives; one such area is the Tyne and Wear Authorities' area. The Agency is a statutory consultee on the AQMA plans, however, in the above table we propose taking a more active role in the management of air quality.

Taken together, the above represent a major step towards actually managing local air quality rather than simply monitoring and regulating the release of atmospheric pollutants.

Within the Wear LEAP area there are:

- several road transport corridors and town centres which may be the biggest sources of air pollutants.;

- several industrial processes which require consent from the Agency to release into air. IPC sites are shown on Map 7 in Part 2;

- many less complex industries regulated as Part B process by Local Authorities.

These sources of pollutants, combined with those outside the LEAP area and prevailing weather conditions, could combine at certain times to create poor air quality in certain places. Further details on this topic can be found in Section 6.3 of Part 2.

Issue 3 Burning of Recycled Liquid Fuels

The Environment Agency has been considering an application from Blue Circle in Weardale for a variation to their authorisation. Their application was to allow permanent burning of Recycled Liquid Fuel at the site. Blue Circle has now withdrawn the application but further applications could be made by the company.

Objectives

- To ensure that any further application by Blue Circle for a variation to their authorisation to allow permanent burning of Recycled Liquid Fuel, satisfies best available techniques not entailing excessive cost (BATNEEC) and best practicable environmental option (BPEO) as defined by the Environmental Protection Act 1990.

No	Proposals/Action needed	Reasons/Advantages
a	Consider any further applications from Blue Circle.	Ensure the Agency fulfills its statutory duty under the Environmental Protection Act 1990.
b	Ensure all interested parties are kept informed.	

Who's involved

Environment Agency, Blue Circle, local authorities, Weardale Action Group, local residents.

Background

The Agency is responsible for regulating the most complex and potentially polluting industrial processes under the Environmental Protection Act 1990. In order that we can carry out our regulatory duties, we use a system known as Integrated Pollution Control (IPC). This system requires the use of best available techniques not entailing excessive cost (BATNEEC) to prevent the release of prescribed substances into the environment or, where this is not practicable, to minimise their release and render them harmless. Where the process is likely to involve the release of substances into more than one environmental media (ie air, land and water), BATNEEC must be used for minimising the pollution to the environment taken as a whole, having regard to the best practicable environmental option (BPEO) available with respect to the substances which may be released.

The Agency has been considering an application from Blue Circle in Weardale for a variation to their authorisation for permanent burning of Recycled Liquid Fuel and expressed concerns directly to the company over the following:

- insufficient monitoring data of good quality at the substitution rate Blue Circle applied for Recycled Liquid Fuel;
- a discrepancy between the monitoring data submitted by the company and the data collected by the Agency;
- an unproven justification in the environmental assessment submitted by Blue Circle that Recycled Liquid Fuel burning produced no net adverse environmental effects.

Blue Circle has now withdrawn their application for permanent burning of Recycled Liquid Fuel. Discussions have been held nationally with the Minerals Industry Group (MINIG) and the Agency's senior lawyer to compare the Weardale issues with similar issues around the country. The House of Commons Environment Select Committee has produced their report on the issue of Recycled Liquid Fuel. The findings and recommendations of that report have been taken into account and will be acted upon where appropriate.

The Weardale Action Group has continued to raise issues concerning site operations at Blue Circle with the Agency and the dialogue with the action group is continuing.

Issue 4 River Water Quality

Poor water quality can adversely affect river use, particularly water abstraction, fisheries, recreation and the natural wildlife and habitats. The quality of surface waters in the area is currently evaluated in a number of ways against a range of statutory and non-statutory standards. Specific details are given in Section 6.1 and Appendix 7.2. Some stretches of river in the Wear area currently fail to meet these targets. Actions needed to improve stretches significantly failing to meet the targets are listed below along with the reason for the failure. Pollution risks are also highlighted.

Objective

- To protect and improve water quality in the River Wear and coastal streams.

No	Proposals/Action needed	Reasons/Advantages
a	• Northumbrian Water Ltd (NWL) to upgrade Tudhoe Mill Sewerage Treatment Works (STW), Sedgeletch STW and Barkers Haugh STW. [Funds allowed for in Asset Management Plan (AMP2). • Monitor to assess the extent of impact and benefit from any alteration to consent.	Stretches of the River Wear do not comply with the Freshwater Fisheries Directive and their Rivers Ecosystem (RE) targets (see Section 6.1 for details of RE) and a stretch of Valley Burn fails its RE target.
b	• Improvements downstream of South Church are to be made to sewer by NWL. [Funds allowed for in AMP2]. • Once remainder of sewerage system is improved, impact will be monitored.	Stretches of the River Gaunless downstream of South Church fail to achieve their RE targets.
c	• Further investigate the reasons for poor water quality of the River Gaunless upstream of South Church, including minewater discharges.	Stretches of the River Gaunless upstream of South Church fail to achieve their RE targets.
d	• NWL to undertake improvements to prevent discharges of storm sewage throughout the Gaunless catchment.	Improvements due to commence as part of River Gaunless scheme. Completion by 1998. Coundon Burn has poor water quality.
e	• NWL to upgrade Bowburn STW. [No funds allowed for in AMP2] • Further investigate the reasons for poor water quality in Croxdale Beck.	Stretches of the Croxdale Beck fail to achieve their RE targets. [NWL and Agency are to form a Croxdale Liaison Group].
f	• NWL to improve combined sewer overflows (CSOs) on Coxhoe Beck. [No funds allowed for in AMP2] • Investigate further reasons for failures.	Stretches of Coxhoe Beck fail to achieve their RE targets.
g	• NWL to upgrade Lanchester STW. [No funds allowed for in AMP2] • NWL to upgrade Browney STW. [Funds allowed for in AMP2]	Stretches of the River Browney at Malton and downstream of Browney STW fail to achieve their RE target and the Freshwater Fisheries Directive.
h	• NWL to upgrade Knitsley STW. [No funds allowed for in AMP2]	A stretch of Smallhope Burn fails to achieve RE target.
i	• NWL to upgrade Crookhall STW. [No funds allowed for in AMP2].	Stretches of Stockerley Burn fail to achieve RE target.
j	• NWL to upgrade Hustledown STW. [Funds allowed for in AMP2] • NWL to upgrade CSOs on Cong Burn. [No funds allowed for in AMP2].	A stretch of Cong Burn downstream of its confluence with the Twizell Burn fails to achieve its RE target. Hustledown STW must be upgraded under the terms of the Urban Waste Water Treatment Directive.

No	Proposals/Action needed	Reasons/Advantages
k	• NWL to continue pilot study ongoing at Sedgeletch STW to achieve ammonia reductions. • Continue liaison with Sunderland City Council to minimise metal discharges from Lambton Cokeworks.	Stretches of Herrington Burn and Lumley Park Burn fail to reach their RE targets.
l	• NWL to upgrade Sacriston STW and improve CSOs. [No funds allowed for in AMP2].	Stretches of the South Burn fail to reach their RE targets.
m	• NWL to continue their drainage area study to investigate CSO and emergency overflows in Castle Eden Dene. • Undertake pollution prevention and waste minimisation campaigns on Peterlee industrial estate in partnership with Groundwork Trust. • NWL to improve emergency overflows and CSOs where needed on Castle Eden Dene. [No funds allowed for in AMP2].	Stretches of Castle Eden Burn and Gore Burn fail to reach their RE targets.
n	• NWL to improve combined sewer overflows throughout the catchment. [Funds allowed for in AMP2]. • Monitor to assess the extent of impact and benefit from any improvement work.	Beechburn Beck has poor water quality.
o	• NWL to upgrade Sherburn STW. [No funds allowed for in AMP2].	A stretch of Sherburnhouse Beck fails to reach its RE targets.
p	• NWL to undertake improvements to CSOs throughout the Dalton Burn catchment. Improvement scheme due to be completed by December 2000.	Dalton Burn has poor water quality.
q	• Monitor surface water outfalls and cross connections, rank the problems in terms of severity. • Address the problem outfalls with NWL.	There is a general problem of surface water outfall contamination over the whole area.

Who's Involved

Environment Agency, Northumbrian Water Limited, Office of Water Services, Durham County Council, industry, farmers, landowners, Groundwork Trust.

Background

Some of the water quality problems shown above are due to the effects of discharges from Northumbrian Water Limited (NWL) sewage treatment works or combined sewerage overflows to the watercourse. Any work by NWL for the improvement and maintenance of the water supply, sewage treatment works and sewerage systems must be planned for in their Asset Management Plan (AMP). These plans are drawn up, through consultations with the Agency and other bodies, to cover a ten year period. The plans have to be agreed by the Department of the Environment (DoE) and the Office of Water Services (OFWAT). Any expenditure in the years 1995 to 2005 for improvements to sewage works or infrastructure must already be planned for in the current AMP (referred to as AMP2). We have indicated in the table above whether the action needed to improve the water quality is planned for in AMP2 or must wait to be considered in the review of the Asset Management Plan (AMP3), which is currently being negotiated.

Over many decades lack of investment in sewerage has resulted in some of the systems becoming severely overloaded. This results in combined sewer overflows (CSOs), a sewer overflow structure which permits a discharge from the sewerage system during wet weather conditions, operating in virtually dry weather, when they were originally designed to operate only in periods of heavy rainfall. The rivers downstream of the CSOs can be polluted as a result. In addition to unsatisfactory overflows, some of the receiving sewage treatment works (STW) require improvement to meet the need of the rivers, these are highlight in the table above.

Previous industrial activity has left a legacy of land contaminated with a variety of chemicals. These sites could pollute rivers and pose an ongoing threat of pollution to surface and groundwaters. Particular areas of concern are shown in the table above.

Further details on this topic can be found in Sections 5.6, 5.7, 5.8 and 6.1 of Part 2 and in Issue 7.

Issue 5 Estuary and Coastal Water Quality

Poor water quality may have a significant deleterious effect on the wildlife and recreation uses of the Wear estuary and coast. Water quality is affected by sewage discharges and industrial activity on the River Wear. Shipyards have the potential to affect some aspects of water quality. The quality of the Wear estuary and the coastal strip is currently evaluated in a number of ways against a range of statutory and non-statutory standard, specific details of these are given in Section 6.1 and Appendix 7.2. Some stretches of estuary, beaches or sites currently fail to meet these targets. The actions needed to address these failures are listed below along with the reason for the failure.

Objective

- To protect and improve the water quality of the Wear estuary and the Durham and Sunderland coast.

No	Proposals/Action needed	Reasons/Advantages
a	• Northumbrian Water Ltd (NWL) to intercept the crude sewage discharges to the Wear Estuary and divert to Hendon Sewerage Treatment Works (STW). [Funds allowed for in AMP2]. • Monitor to assess the extent of impact and benefit of changes to the outfalls.	There are discharges of untreated sewage into the River Wear at Queen Alexandra Bridge, Castletown Way, North and South Hylton. Under the Urban Waste Water Treatment Directive (UWWTD) these will need to be intercepted.
b	• NWL to install secondary sewage treatment at Hendon STW by 2001 or be granted derogation by the European Union.	To comply with the Urban Waste Water Treatment Directive Hendon STW requires secondary treatment to be installed by 2001 or NWL need a derogation from the European Union.
c	• Improve practices at ship repair yards. in the Wear estuary. • Continue to monitor Tributyl Tin (TBT) in water and accumulation in the sediments and marine life.	The lower Wear estuary fails to comply with the limit set by the List II standard of the Dangerous Substances Directive for TBT. Tributyl tin is painted onto the hulls of ships as an anti-foulant. Shipyards on the River Wear have increasingly been winning contracts to repair ships. The risk of TBT pollution may therefore increase.
d	• NWL to intercept Combined Sewer Outfalls (CSOs) on Icehouse Burn. [Funds allowed for in AMP2 - work completed in May 1997].	Seaham and Seaham Remand home beach, have in the past, failed to comply with the Bathing Water Directive.
e	• NWL to provide secondary treatment to Hordon and Seaham discharges by 2001. • Agency to ensure that requirements of UWWTD are met.	Under the UWWTD Hordon and Seaham discharges sea outfalls must have secondary treatment in place by 2001 unless they discharge to a High Natural Dispersion Areas (HNDAs), and have no adverse effect on the environment (see below).
f	• NWL to undertake comprehensive studies on all High Natural Dispersion Areas (HNDAs) and report finds to the Agency. • Agency to audit studies to ensure discharges are having no adverse effect on environment.	Under the UWWTD all discharges to High Natural Dispersion Areas (HNDAs) must have no adverse effect on the environment.
g	• NWL to intercept Brus short sea outfall. [Funds allowed for in AMP2]	Crimdon beach has, in the past, failed to comply with the Bathing Water Directive.

Who's Involved

Environment Agency, Northumbrian Water Limited, industry, Office of Water Services, shipyards, Ship Repairers Association.

Background

Some of the water quality problems shown above are due to the effects of discharges from NWL discharges. Any work by NWL for the improvement and maintenance of the water supply, sewage treatment works and sewerage systems must be planned for in their Asset Management Plan (AMP), for further details see Issue 4.

Much of the investment to improve coastal water quality is being driven by two EC Directives:

The Urban Waste Water Treatment Directive (91/271/EEC) (UWWTD)
(to be implemented in the UK by the year 2005)

which applies to discharges of domestic sewage and certain industrial discharges made into fresh and saline waters. Standards are set down for discharge quality and levels of treatment are specified according to the size of discharge and to the characteristics of the receiving water. The Directive also seeks to apply more stringent effluent standards to discharges into 'sensitive' waters and may require the addition of tertiary treatment to remove nutrients. Discharges from population equivalents (pe) of greater than 15,000 generally require secondary treatment to be provided by the end of the year 2000. Those between 10,000 and 15,000 pe must receive such treatment by the end of 2005. Smaller discharges must receive "appropriate treatment" by the end of 2005. "Appropriate treatment" will depend on the needs of the receiving water.

Discharges to sea of between 10,000 and 150,000 pe (and, exceptionally, with the agreement of the European Commission, those greater than 150,000 pe) to "high natural dispersion areas" (HNDAs) may require only primary treatment. In this case, the discharger must demonstrate to the Agency by "comprehensive studies" that the discharge has no adverse effect on the environment. These must be reviewed every four years.

Hendon STW

The Agency is currently dealing with an application from NWL for a new discharge of treated sewage at Hendon, Sunderland. The consent conditions would reflect the need for NWL to provide "secondary" treatment unless they satisfy the EC Commission that "primary" treatment only will suffice. Evidence to show "no environmental benefit" would be needed. Consultation on the application has resulted in enormous public interest, including a 15,000 name petition objecting to the scheme. The objection is based on a desire to have nothing less than "full" treatment plus ultraviolet disinfection. Other objections have been received from local MPs, European MPs, the City of Sunderland and the Tyne and Wear Development Corporation, who are determined to challenge the DoE on its interpretation of the Directive and the EC Commission if necessary. To comply with the Urban Waste Water Treatment Directive Hendon Sewage Treatment Works either requires secondary treatment to be installed, or NWL need a derogation from the European Union.

Shipyards

Tributyl tin (TBT) is an anti-foulant that can be used to prevent marine growths on the hulls of ships (longer than 25m) which keeps the hull clean, reducing drag and improving fuel efficiency. However, some TBT dissolves in water and the concentrations in estuaries and around the coast can affect marine life. Shellfish are particularly sensitive and TBT has been shown to cause shell thickening in oysters and sex changes in dogwhelks which result in an inability to breed successfully. A limit of 2ng/l TBT has been set in the Dangerous Substances Directive. Concentrations in the River Wear are well above this, partly due to historical accumulation of TBT in the sediments. A study carried out in 1991, in conjunction with the University of Newcastle, showed that shellfish populations on beaches close to the mouth of the Tyne estuary were recovering. This work could be undertaken in the River Wear to monitor the effect of changes in TBT levels on marine life.

Shipyards on the River Wear have increasingly been winning contracts to repair ships which often involves repainting. Approximately 10% of the ships will have previously been painted with TBT paint. The removal of the old paint and any subsequent respraying with TBT paint must be authorised under Integrated Pollution Control. The shipyards carrying out these activities have been authorised since the summer of 1996 and all have improvement programmes that must be implemented within 2 years. This includes the treating of any process waters that may contain TBT to a level of 200ng/l or less and the operator must demonstrate that when discharged this will be diluted at least 100 fold. The Agency is also investigating the quantities of TBT released during the refloating of newly painted vessels, as this is believed to contribute significantly to levels in the River Wear.

Further details on these topics can be found in Sections 5.7 and 6.1 of Part 2, and 7.2 in Appendices.

Issue 6 Groundwater Protection

Groundwaters in the Wear LEAP area, in particular the Magnesian Limestone aquifer, are used to supply drinking and raw water. Groundwater is important for water supply and it feeds surface water, wetlands and their wildlife. Groundwater is vulnerable to many activities that can cause pollution through underground seepage. Once water underground is polluted, it is extremely difficult and costly to remediate. Protection of groundwater quality is therefore vital.

Objective

- To protect groundwater from the risk of pollution.

No	Proposals/Action needed	Reasons/Advantages
a	Produce Groundwater Vulnerability Maps.	These can be used to ensure inappropriate operations do not take place in high risk areas.
b	Define groundwater source protection zones (additional monitoring boreholes may be required).	Provide adequate groundwater protection.

Who's Involved

Environment Agency, local authorities, landowners, farmers, industry.

Background

Groundwater not only needs to be protected to maintain water supplies from aquifers, it also naturally feeds surface waters through springs and flows to rivers. Its presence is often important in supporting wetlands and their ecosystems. Removal or diversion can affect total river flow. A reduction in either the quantity or the quality of the contributing groundwater can significantly influence surface water and the achievement of water quality standards. Surface water and groundwater are intimately linked in the water cycle, with many common issues. The protection of groundwater resources from the effects of human activity is therefore just one facet of the total protection of the water environment.

The Agency's Policy and Practice for the Protection of Groundwater has two aspects of protection:

Groundwater Resource Protection

Vulnerability maps are currently being produced which take into account the following factors:

- presence and nature of overlying soil;
- presence and nature of drift;
- nature of strata;
- depth of unsaturated zone.

Groundwater Source Protection

This relates to the specific protection which may be appropriate for individual sources. Three zones are generally defined for each source. The orientation, shape and size of the zones are determined by the hydrogeological characteristics of the strata and the direction of groundwater flow.

Most of the east of the Wear LEAP area is on Magnesian Limestone which is classified as a major aquifer.

Further details on this topic can be found in Sections 4.1, 4.2 and 5.6 of Part 2.

Issue 7 Minewaters

All deep mining for coal in the Durham coalfield has ceased. Now the coastal collieries have closed it is no longer necessary to pump to protect the underground workings. Most of these pumping stations are in the Wear catchment. In other parts of the country, the cessation of pumping and flooding of coal mines has resulted in contaminated discharges to the surface. In particular, rusty deposits of iron hydroxide in the receiving waters have caused severe environmental damage which is both difficult and expensive to remedy. The threat of pollution from this source is a major issue in the region. There are also many discharges from spoil heaps and minewater currently affecting watercourses within the area. The table below outlines the Agency's role in these two issues.

Objective

- To work with others to minimise the effect of abandoned mines on the environment.

No	Proposals/Action needed	Reasons/Advantages
a	Continue Minewaters project to: • investigate likely flow routes for minewater through the coalfield; • update predictions as data are collected from investigation boreholes and water level monitoring in pump shafts; • consider proposals from the Coal Authority; • disseminate information to interested parties.	Ensure any changes in pumping will not lead to unacceptable risk of pollution.
b	Following the Minewaters Project undertaken recently on abandoned mine sites, carry out further investigations to identify potential improvement schemes.	Those sites having the greatest impact on receiving watercourses can be targeted for improvement schemes.
c	Continue project on Rookhope Burn investigating the effect of high levels of zinc discharging from abandoned metalliferous mines and an existing fluorspar mine. Objectives of the projects are: • to identify and cost possible remediation methods; • to identify joint partners to fund any recommended work.	Assist in minimising the effect of high levels of zinc discharges on river.

Who's Involved

Environment Agency, the Coal Authority, Durham County Council, local authorities, landowners, mining companies.

Background

Deep mining for coal in the area has ceased. Before the closure of coastal collieries, British Coal operated a number of inland pumping stations (former collieries) to intercept and prevent minewater flowing through the workings towards to the coast. The Coal Authority is now responsible for the operation of the nine remaining pumping stations.

The Agency is concerned that the cessation of pumping and flooding of coal workings of the Durham coalfield would result in polluting discharges. To investigate this potential problem, and prior to the closure of the coastal collieries, the former National Rivers Authority commenced investigations including the construction of several monitoring boreholes. The use of computer models predicted that large discharges of polluted minewater would start within months of the pumps stopping. However, predicting the likely future pattern of minewater flows is extremely difficult due to the complexity of the underground flow routes through the vast areas of old workings. The Agency is continuing its investigations so as to improve the accuracy of predictions.

The Coal Authority continues to operate the pumping stations while further investigations progress. The cost of this pumping is around £1 million per year. Ministers have given assurances that the Coal Authority will continue the minewater pumping in the Durham coalfield.

The "Code of Practice Relating to the Abandonment of Mines and Reductions in Minewater Pumping" has now been ratified. In the absence of statutory provisions to deal with discharges from abandoned mines the Agency will continue liaison with these parties to establish an operating framework to prevent water pollution.

There are also many minewater discharges currently affecting watercourses within the area. The extent of the problem had not, until recently, been quantified. The Agency carried out a project in 1996/97 to prioritise which of these abandoned coal sites is having the greatest impact on the receiving watercourse and will have powers to deal with pollution from any mines abandoned after 1999. However, mines abandoned before this date are exempt.

Further details on this topic can be found in Sections 4.1, 5.4 and 5.5 of Part 2.

Issue 8 Contaminated Land

The Wear LEAP area has a legacy of land contamination principally in the east of the area. (The impact of minewaters is dealt with in Issue 7). New contaminated land regulations will soon be implemented and will have a major effect on how contaminated land issues are dealt with. The implementation of the new regime will mostly be the responsibility of the local authorities, however, the Agency will be the 'lead authority' for 'special sites'.

Objective

- To work closely with local authorities and others to secure the remediation of contaminated land sites in the Wear LEAP area.

No	Proposals/Action needed	Reasons/Advantages
a	Promote and advise on redevelopment of contaminated land sites.	Assist remediation so that land is brought into beneficial use.
b	Once the duties of the Agency and local authorities towards contaminated land have been clarified we will take responsibility for regulating 'special sites'.	Fulfills duty under the Environment Act 1995

Who's Involved

Local authorities, landowners, developers, Environment Agency.

Background

The Environment Act 1995 contains the framework for a new contaminated land regime. The contaminated land provisions of the Act will come into force when regulations have been made and official guidance has been published. The 'special sites', for which the Agency will be 'lead authority', will be those which represent a particularly serious threat to the environment, including certain closed landfill sites. The Agency will develop its role as a consultee with local authorities on technical details and where there is local expertise.

The remediation of contaminated land can cost substantial sums of money. Progress in dealing with sites is likely to depend on Government policy and the private sector in relation to the availability of funding. Often the feasibility of carrying out remediation is influenced by the degree of 'added value' conferred on land by remediation and redevelopment.

Dealing with contaminated land will make heavy demands for information. The Agency has historic information relating to pollution incidents, industrial processes, historic or illegal tipping. The management of information and the exchange of information with local authorities will be an important role of the Agency.

Further details on related topics can be found in Section 5.4 of Part 2.

Issue 9 Sustainable Waste Management

The Government has set various targets in order to promote more sustainable waste management. One of these is the target to recycle or compost 25% of household waste by 2000. Many local authorities in the area are unlikely to meet the targets due to financial considerations and organisational problems. More cooperation could ensure that economies of scale are identified and that competition is minimised.

Objectives

- To promote cooperation between Waste Collection Authorities (WCAs), Waste Disposal Authorities (WDAs) and the waste management industry.

No	Proposals/Action needed	Reasons/Advantages
a	The Agency offers to establish a Sustainable Waste Management Forum.	• Promotes sustainable waste management practices in the area. • Facilitates cooperation between the various organisations. • Ensures economies of scale are identified and works towards achieving them. • Ensures that competition for waste or for markets is minimised. • The targets are more likely to be achieved. • Information and data on waste issues can be shared.

Who's Involved

Environment Agency, Officers and Members from Waste Collection Authorities and Waste Disposal Authorities and possibly representatives from the waste management industry.

Background

There are well publicised targets set out in the Government's strategy for sustainable waste management (Making Waste Work). These include:

- the reduction of waste going to landfill from 70% to 60% by 2005;
- recycling and composting of 25% of household waste by 2000;
- the recovery of 40% of municipal waste by 2005;
- easily accessible recycling facilities for 80% of households by 2000.

At present the amount of waste passing through sustainable waste management technologies in the Wear area is extremely low. Most local authorities recycle less than 3% of household waste. Practically no household waste is being composted or anaerobically digested. There will need to be a rapid change in waste management philosophy if this situation is to change within the Wear area by the target date.

Part of the problem of not meeting the targets is caused by financial and organisational issues. The Agency is not in a position to directly ease financial problems however, the landfill tax and possibly the new Packaging Regulations will play a major role in making sustainable waste management economically viable in comparison to landfill.

Further details on related topics can be found in Section 5.8 of Part 2.

Issue 10 Sites Exempt from Waste Management Licensing

Due to the introduction of new legislation many sites that handle or dispose of waste have recently been made exempt from Waste Management Licensing. Some of these sites have the potential to pollute the environment but the extent of this is unknown. There is no specific requirement for the Agency to inspect or monitor the sites, so the exemptions can be abused. There are possibly many sites that should have registered with the Agency as exempt but have failed to do so.

Objectives

- To ensure that exempt activities do not cause pollution of the environment or harm to human health.
- To determine whether exempt sites are complying with the exemptions.

No	Proposals/Action needed	Reasons/Advantages
a	Undertake a survey to establish the number and type of unregistered, exempt activities.	• Ensures all waste handlers are complying with the legislation. • Establishes the potential workload. • Provides information on waste disposal and recycling routes.
b	Undertake a survey to establish the amount of waste now going to exempt sites that previously went to licensed sites.	• Quantifies the amounts and types of waste going via relatively uncontrolled disposal routes. • Assesses the rate of increase in exempt activities.
c	Undertake a survey to establish the pollution potential of various exempt activities.	• Will provide the information needed to establish the frequency of monitoring needed. This can then be used consistently.
d	Develop a policy of inspections and carry out inspections accordingly, with frequencies relevant to specific exemptions.	• Ensures exempt activities are complying with the exemption requirements. • Ensures regulatory control of previously uncontrolled disposal routes.
e	Undertake an assessment of current registration systems and agree a consistent registration format. Develop a regional/national database.	• Standardised registration. • Easier access for enquiries.

Who's Involved

Environment Agency, exempt site operators, waste producers.

Background

The Government's policy is to encourage the recycling and reuse of waste and there has also been a move towards deregulation. To further this aim a scheme of exclusions and exemptions were introduced by the Waste Management Licensing Regulations 1994. The waste management industry, in a recent survey, identified that nationally there is approximately 30 million tonnes of waste per annum that is being disposed of via exempt activities.

The Regulations list 45 exemptions which can be broken down into 5 main categories:

(i) activities for which adequate controls are provided by other legislation;
(ii) those covering recovery or reuse of wastes;
(iii) activities leading to the recovery or reuse or waste;
(iv) disposal of own waste at the place of production;
(v) other deposits.

There are various problems associated with the exemptions:

- Exempt activities must be registered with the Agency but the penalty for failing to register is an insignificant £10.

- The exemptions apply to an extensive range of waste materials from diverse sources and with varying potential to pollute and little monitoring or control takes place.

- Only metal recycling sites attract a registration fee and have a prescribed monitoring regime, although the Agency has a general duty to carry out periodic inspections of waste management activities. There are no fees to finance any monitoring. This goes against the polluter pays policy.

- The conditions for the exemptions tend to be unspecific with some being difficult to interpret. This makes controlling and enforcing the exemptions difficult until further clarification or guidance is given.

- The disposal of waste at an exempt site is also exempt from landfill tax duty therefore, the operator can have an unfair commercial advantage over regulated waste management facilities. As a result of the amount of waste being disposed of at exempt sites is increasing.

The exemptions, from Schedule 3 of the Waste Management Licensing Regulations 1994, that cause the most concern are:

Paragraph 7 The spreading of specific wastes on land for the benefit of agriculture or ecological improvement. Experience has shown that this exemption is used for the disposal of waste without generally proving the benefit. If the wastes in question were allowed onto a licensed waste disposal site they would be subject to strict control measures. (Also refer to Issue 13).

Paragraphs 9 & 19 The deposit of waste for reclamation or improvement and construction purposes. It particularly exempts the construction of recreational facilities and vast quantities of material have been disposed of without any regulatory control or monitoring eg a golf course accepting 900,000m^3 of waste. (Also refer to Issue 13).

There are approximately 220 registered exempt activities within the Wear LEAP area and an unknown number of activities which have not registered.

Further details on related topics can be found in Section 5.8 of Part 2.

Issue 11 Illegal Tipping of Waste

Illegal tipping of waste causes pollution of the environment and is unsightly. Since the creation of the Agency the number of complaints regarding illegal tipping has increased. This is partly due to the introduction of the Landfill Tax. Illegal tipping is linked to businesses being unaware of their responsibilities under the Duty of Care.

Objectives

- To reduce illegal tipping through education of businesses, surveillance of offenders and liaison with local authorities.

No	Proposals/Action needed	Reasons/Advantages
a	Improve public awareness regarding the importance of environmental protection from waste tipping via: • seminars to Green Business Clubs and other organisations; • educational campaigns.	• Makes companies aware of the legislation that is applicable to them and the penalties. • Targets many companies at one time.
b	Increase surveillance exercises at illegal tipping blackspots including the use of CCTV cameras.	• Provides good evidence that can be used to prosecute the flytippers.
c	Undertaken vehicle stop campaigns to check: vehicles suspected of carrying waste; carriers have a valid registration with the Agency.	• Identifies organisations/individuals operating illegally. • Has proven very successful in the past. • Value as a deterrent.
d	Maintain liaison with local authorities.	• Encourages cooperation and the subsequent deployment of local authority resources. • Creates exchange of information.

Who's Involved

Environment Agency, Northumbria Police, other agencies, local authorities, companies, Tidy Britain Group.

Background

Illegal tipping (also known as fly tipping) of waste has three effects:

- a detrimental effect on the environment at the expense of others;
- financial benefits to those disposing of the waste illegally;
- a detrimental impact on the local regulated trade or industry.

The number of complaints regarding illegal tipping received by the Agency more than doubled during 1996/1997. This is probably due to:

- the higher profile of the Agency compared to the Waste Regulation Authorities;
- the introduction of the Landfill Tax in October 1996.

The creation of the Agency and associated publicity, the introduction of a 'hotline' telephone number and the continuing liaison with district councils have all raised the profile of the Agency. The Agency is often contacted by people with the view that 'no one else is able to do anything, I wonder if you can'. We may pass the complaint on to another authority if they are responsible, but when the remedial work or enforcement is carried out the person who complained will believe that the change resulted from contact with the Agency. This then fuels further contact on a number of issues. The Landfill Tax is yet to have its greatest impact. Some of the annual contracts between companies and waste contractors have not been reviewed since the tax was introduced. It is anticipated that the significant increase in costs for these services may result in producers of waste using alternative, cheaper methods of disposal. These could fail to meet their legal obligations and could cause damage to the environment.

The reports and complaints on illegal tipping of waste tend to be seasonal, with peak periods being the spring and summer months. The types of waste may vary but largely consist of either builder's type waste or garden wastes. Waste producers, both businesses and the public, need to be made aware of their responsibilities, particularly small companies which may be unaware of their responsibilities under 'The Duty of Care'. The investigation of persistent flytippers can be targeted and made more consistent. Further details on this topic can be found in Sections 5.8 and 7.3.

Issue 12 Working with Industry - Minimising Waste and Preventing Pollution

There are many opportunities for the Agency to work with industry to encourage more sustainable practices which can have wide environmental benefits. Waste minimisation and increased process efficiency through the 3Es methodology (emissions, efficiency and economics) can reduce emissions and save on raw materials, energy and disposal costs. Many companies are unaware of the environmental legislation that already applies to them and will need guidance on new legislation. There is also great scope for encouraging environmental best practice which can reduce pollution.

Objectives

- To promote best practice in industry relating to pollution prevention.
- To educate companies on environmental legislation.
- To promote waste minimisation and the 3Es methodology.
- To carry out risk analysis in drinking water catchments.

No	Proposals/Action needed	Reasons/Advantages
a	Steer and coordinate waste minimisation projects in the Wear area and support those that offer the maximum environmental benefit.	• Provides best practice case studies for other companies within the Wear area. • Reduce emissions to the environment. • Form beneficial relationships with external public and private sector organisations. • Reduce duplication of effort. • Enable companies to progress from one initiative to another where appropriate.
b	Progressively extend the 3Es initiative in the Wear area.	• Reduce emissions to the environment. • Improve process efficiency and identifies cost savings for operators.
c	Undertake pollution prevention and Lumley risk analysis visits in conjunction with waste surveys, targeting areas with known pollution problems.	• Reduce pollution risks from industrial premises. • Enable companies to improve compliance with regulations. • Reduce the amount of 'end of pipe regulation' needed. • Protect Lumley abstraction.
d	Keep companies up to date with environmental legislation and best practice through seminars/workshops, in particular ensure awareness of the new Packaging Regulations.	Ensures businesses are aware of environmental legislation.
e	Continue work with the North East Chamber of Commerce on the Local Partnership initiative.	Strengthen links between the Agency and business, ensuring business are aware of environmental legislation.

Who's Involved

Industry, North East Chamber of Commerce, Confederation of British Industry, waste minimisation projects, Environment Agency.

Background

The Agency has various statutory responsibilities relating to industry, these include: Integrated Pollution Control for some of the most potentially polluting industrial processes; consents for effluent discharges; regulations relating to the management of wastes, such as Duty of Care, Special Waste and Producer Responsibility for Packaging. In addition there are many opportunities for the Agency to work with industry towards more sustainable practices which have environmental benefits beyond compliance with regulations.

Waste Minimisation Projects

Industry and the environment would benefit from expanding the current waste minimisation projects which aim to reduce waste at source rather than dealing with it afterwards. This has the benefit of: reducing emissions to the environment; saving on raw materials; energy and disposal costs; improve the companies' environmental performance. The Agency is currently supporting the Easington Waste Minimisation Initiative and is involved in other projects in the Tyne and the Cheviot and East Northumberland LEAP areas.

The 3Es Methodology

The 3Es (emissions, efficiency and economics) methodology, devised by the former HMIP (a predecessor to the Agency) in conjunction with Business in the Environment, goes further than waste minimisation. It is a structured technique to achieve improved environmental performance through process optimisation. It involves reviewing an industrial process in a systematic way to identify potential improvements and to assess their impact on 'emissions, efficiency and economics'. It considers both actual and potential emissions. This methodology has been successfully applied to several companies in the Wear area. The benefits of the 3Es methodology could be extended further and to a wider range of industry, not just to those authorised by Integrated Pollution Control.

Environmental Legislation

Companies need to be more aware of the legislation that applies to them such as the Duty of Care, the new Special Waste Regulations and the new Producer Responsibility Obligations for packaging waste. There is great scope for companies to be encouraged to use environmental best practice which can reduce the risk of pollution incidents, reduce waste and releases to the environment and may save costs.

Pollution prevention and Lumley Risk Assessment

Pollution prevention campaigns have been initiated when there has been a pollution problem in a particular area. There is already progressive integration of these visits to ensure that companies obtain as much advice as possible from one point of contact with the Agency.

A major project is underway in the River Wear catchment to reduce the risk of pollution to public drinking water supplies at Lumley. This joint project is being undertaken by the Agency and Northumbrian Water Ltd. Water supply companies have been asked to carry out a risk assessment on their drinking water abstractions following a major pollution incident involving river water abstraction at Worcester.

Agency officers are carrying out an audit of sites upstream of the intake to identify potential risks to the intake. Visits involve an appraisal of the processes carried out on site, chemical storage and management procedures. Information from the project database will then be entered into two models PRAIRIE a risk assessment tool developed by SRD funded by a consortium including the Agency; and POLLUX a risk management tool developed by Safege (subsidiary of Lyonnaise des Eaux).

The PRAIRIE model will be used to encourage site operators to carry out works to mitigate the risk. The POLLUX model will be used during incident management to assess the impact of an accidental release on the intake. A pollution incident exercise is being planned for early next year involving industry, Northumbrian Water Ltd and the Agency to test incident management procedures developed during the project.

Further details on related topics can be found in Sections 1.3 of Part 1, 5.3 and 5.8 of Part 2.

Issue 13 Working with Farmers and Foresters - Minimising Waste and Preventing Pollution

Farming and forestry are major land uses in the Wear area. Over recent years, pollution incidents from agricultural and forestry sources have reduced. However, agricultural and possibly forestry operations are still a potential pollution risk within the Wear area in particular upstream of surface water abstractions for public water supplies. Agricultural and forestry activities are also exempt from waste management licensing and therefore, disposal of solid wastes from farming and forestry activities could be an, as yet undefined, issue. (Issue 20 deals with the Agency's involvement with farmers and foresters to enhance river and wetland habitats).

Objective

- To work with farmers, foresters and their advisers to minimise the risk of environmental pollution as a result of their activities.

No	Proposals/Action needed	Reasons/Advantages
a	Undertake pollution prevention campaigns and farm surveys to identify potential risks to the environment from agricultural and forestry sources in the Wear area. These proposals should be coordinated with work undertaken by other organisations, in particular MAFF and the Farming and Rural Conservation Agency (FRCA), and targeted at specific areas of risk.	Will ensure best use of resources to minimise environmental risk from agriculture and forestry activities.
b	Integrate a solid waste minimisation and disposal element into the above.	Ensure solid waste management is considered in farm campaigns.
c	Monitor the application of Asulox and other herbicides in the LEAP area if groundwater, surface water or fish may be affected.	Assist in ensuring the correct use of pesticides to protect groundwater, surface water and fish.

Who's Involved

Environment Agency, farmers, foresters, MAFF, Farming and Rural Conservation Agency, ADAS, National Farmers Union, Farming and Wildlife Advisory Group, Forest Enterprise, Forestry Authority, Northumbrian Water Limited, Rural Development Commission.

Background

Pollution of ground and surface waters can arise as a result of poor management practice for the control of: the range of agrochemicals used in modern food production; silage effluent and slurry disposal associated with intensive stock farming. Agricultural pollution prevention has been greatly aided by the introduction of The Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) Regulation 1991 and the availability of capital grants for fixed waste handling equipment from the Ministry of Agriculture, Fisheries and Food (MAFF). The regulations ensure that new or substantially altered waste storage facilities comply with minimum sizing and construction criteria.

Over recent years, pollution incidents from agricultural and forestry sources have reduced in number. This reduction is a result of major investment by the agricultural community in anti-pollution equipment, eg-slurry stores, dirty water systems, pesticide storage areas etc, and an increase in awareness of the problem, as a result of pollution prevention campaigns by the Agency, its predecessor organisations, MAFF and others.

In parts of the Wear area, the spread of bracken often causes problems and farmers have increasingly used a herbicide called Asulox to assist in its control. The Agency has an obligation to control and monitor the application of this and other herbicides if groundwater, surface water or fish may be affected. There has been a considerable increase in the number of hectares of land sprayed over the Wear area in the past few years.

This issue reflects the need for the Agency to integrate its activities and work in partnership with farmers, foresters and other organisations to minimise waste, prevent pollution and enhance the environment in rural areas. Further details on related topics can be found in Sections 5.7, 5.8 and 5.10 of Part 2.

Issue 14 Working with Other Agencies

The Environment Agency is one of several Government agencies involved in management of the environment, others include English Nature, the Countryside Commission, Forest Enterprise, the Forestry Authority, English Heritage and the Farming and Rural Conservation Agency. Each agency has a different remit, but they are all involved in the management of the environment and develop their own business plans. To ensure an integrated approach to the management of the environment and the efficient use of resources the Agency needs to work closely with these other agencies as well as businesses, farmers, foresters and voluntary bodies.

Objective

- To ensure close co-operation between all agencies working in the Wear LEAP area and achieve the efficient use of limited resources.

No	Proposals/Action needed	Reasons/Advantages
a	Ensure effective liaison with English Nature, particularly in relation to the Habitats Directive (see Issue 23).	• Statutory requirement in many cases. • Avoid duplication of effort. • Pooling of resources.
b	Identify actions from the Countryside Commission and English Nature's Countryside Character/Natural Areas Programme where the Agency could take the lead, and assist with actions which fall within its remit where resources permit.	• Effective use of resources. • Achievement of mutually beneficial objectives.
c	Continue liaison with statutory forestry agencies and the Great North Forest.	• Achievement of mutually beneficial objectives.
d	Establish liaison with the newly formed Farming and Rural Conservation Agency (FRCA).	• Achievement of mutually beneficial objectives. • Raise the profile of wetland management within the Countryside Stewardship Scheme. • Ensure Agency input to the Countryside Stewardship Scheme through the setting of priorities and commenting on individual applications.
e	Continue liaison with English Heritage to ensure protection of sites of historic importance and identify possible joint actions to improve educational aspects of these sites.	• Achievement of mutually beneficial objectives. • Ensure protection of sites of historic importance.

Who's Involved

English Nature, the Countryside Commission, Forest Enterprise, the Forestry Authority, Farming and Rural Conservation Agency.

Background

The Countryside Commission and English Nature are currently developing their joint Countryside Character Programme. The Countryside Commission's Countryside Character Programme considers actions required to maintain and enhance the landscape of areas with distinct landscape character. English Nature's Natural Areas Programme focuses on the management required for areas with distinct habitat types. Wherever possible, English Nature and the Countryside Commission have agreed that their boundaries should coincide and have created a 'new map of England' (see Map 18 in Part 2 for the details of this in the Wear LEAP area).

The Farming and Rural Conservation Agency (FRCA) is responsible for the management of agri-environment schemes such as the Countryside Stewardship Scheme and for providing advice to landowners. The Agency will need to liaise with FRCA and can offer advice on specific schemes.

Some areas of Sunderland are included in an area designated for the Great North Forest. The Great North Forest initiative between local councils, the Countryside Commission and the Forestry Commission, for the creation of a community forest which may increase recreational activity in the area.

To gain the maximum benefit from all these initiatives and those of the other agencies mentioned above, effective communication must be developed between all the agencies. Further details on topics related to this issue can be found in Sections 5.10 and 5.12 of Part 2.

Issue 15 River Wear Estuary Management Plan

The River Wear is an important resource. In addition to being a port, it supports working communities, industry, provides habitats for wildlife and is used for water-based recreation. Some areas of the river front have been or are currently undergoing redevelopment. In order to coordinate activities within the estuary Sunderland City Council are producing an Estuary Management Plan. This issue relates to the Agency's role in the production and implementation of the River Wear Estuary Management Plan.

Objectives

- To assist Sunderland City Council in the development and implementation of an integrated plan to promote the sustainable management of the estuary for a variety of uses.

No	Proposals/Actions needed	Reasons/Advantages
a	Continue the Agency's involvement in the Estuary Management Plan for the River Wear.	Provides a mechanism to deal with conflicts of interest and to reach a consensus for the management of the estuary in the future.
b	Ensure the Agency is involved in the Working Groups to develop policy and oversee the implementation of the plan for the estuary.	The Agency will be working with the key players in the management of the Wear estuary.
c	Undertake actions where the Agency is identified as lead agency and assist with actions which fall within its remit, where resources permit.	Many actions will be undertaken in the course of the Agency's normal work programme.

Who's involved

Sunderland City Council, Harbour Commission, Environment Agency, English Nature, National Trust, Countryside Commission, Durham Wildlife Trust, recreation groups.

Background

The River Wear, and its estuary, was once at the heart of the heavy industries which supported the economy of the North East. Until recently, ship building, coal mining and marine engineering employed thousands of local people and dominated the river and its environment. Now, with the decline in traditional industries and the regeneration of the area, the role of the Wear estuary in the local economy is changing.

Wear Estuary Management Plan

The estuary remains an important cultural and historical focus for Sunderland and has considerable potential for further recreational and tourism development. It is an important corridor for wildlife linking the countryside with the heart of the city. Water quality has improved with the decline of heavy industry, but is still affected by sewage (see Issue 5). The Wear Estuary Management Project has been formed to encourage communication between all those organisations which have an interest in the area and co-ordinate existing responsibilities to the benefit of the estuary's environment.

A Project Officer has been appointed to develop a strategy which will put 'management', in its broadest sense, higher on the agenda for the next century. The Wear Estuary has seen tremendous changes in the last ten years alone. An Estuary Management Plan will be developed which will guide the future use of the river and its immediate area, taking a wide variety of opinions into consideration and balancing the demands made on the natural resources by interests ranging from industry, to recreation and wildlife.

'Making Waves' Recreation Strategy

The local authorities of Tyne and Wear, along with the former National Rivers Authority (now part of the Environment Agency), Sports Council and Tyne and Wear Development Corporation produced 'Making Waves' a strategy to improve facilities, training, management and co-ordination of watersports in the coast and estuaries of Tyne and Wear (see Issue 24).

Further details on topics related to this issue can be found in Section 5.13 of Part 2.

Issue 16 The Sunderland and Durham Coast

Durham's coastline offers one of the greatest opportunities for environmental improvement over the next decade. The Durham Coast has been affected by spoil-tipping from the area's past coal mining industry. A large amount of work has been undertaken by the East Durham Task Force and the issue is addressed in the Durham Coast Management Plan and the Millennium Fund project 'Turning the Tide'. The Agency is also involved in the production of two Shoreline Management Plans (SMPs) which cover the Sunderland and Durham coasts. This issue relates to the Agency's role in the management of the Sunderland and Durham coast. Details of estuary and coastal water quality issues are given in Issue 5.

Objective

- To work with others to protect and improve the Sunderland and Durham coast.

No	Proposals/Actions needed	Reasons/Advantages
a	Prepare, in conjunction with key partners, SMPs for the two coastal cells overlapping the Wear LEAP area: between the River Tyne to Seaham and Seaham to Saltburn. Undertake beach profile monitoring surveys to assist in the production of the SMP.	Improves: understanding of coastal processes; prediction of the likely future evolution of the coast; identifying assets at risk; improving consultation between organisations with an interest in the shoreline.
b	Act as the independent environmental watchdog for the spoil removal aspects of the 'Turning the Tide' project.	Will ensure that the Agency is free to act as a regulator at the disposal sites, thereby reassuring the Millennium Commission and the public that the environment will be fully considered and protected during the spoil removal.
c	Take an active role in other aspects of the 'Turning the Tide' project.	The Agency will be able to assist, particularly with the nature conservation, recreational and environmental monitoring aspects of 'Turning the Tide'.

Who's Involved

Environment Agency, Coastal Authorities' Group, East Durham Task Force, local authorities, MAFF, English Nature, Countryside Commission, National Trust and Durham Wildlife Trust, recreation groups.

Background

Durham Coast Management Plan

Durham's coastline offers one of the greatest opportunities for environmental improvement over the next decade. The Durham Coast has been affected by spoil-tipping from the area's past coal mining industry. However, since the dumping of colliery waste ceased at Dawdon and Easington, the beaches have started a self-cleansing process and the underlying sand is beginning to reappear. Some work is planned to assist in clearing debris underlying the coal which includes concrete and metal structures, hardened deposits etc. and some spoil heaps. A large amount of work has been undertaken by the East Durham Task Force and is addressed in the Durham Coast Management Plan and the Millennium Fund project 'Turning the Tide'.

Shoreline Management Plans

The Shoreline Management Plans will sets out a strategy for the coastal defence of a specified length of coast. The strategy takes into account the natural coastal processes, human influences, land use and other environmental matters. (see Section 5.9)

Further details on these topics are given in Section 1.3 and 5.9.

Issue 17 Flooding of Land and Property

Rivers and watercourses can only accommodate a certain maximum flow, when this is exceeded, flooding occurs.

Objective

- To reduce the risk and provide timely warning systems for people and property against flooding from rivers and sea.
- To ensure all flood defence works fulfill the Agency's duty to further conservation.

No	Proposals/Actions needed	Reasons/Advantages
a	Undertake an investigation into using more sustainable methods for maintenance works in rivers; ie using natural techniques and sensitive erosion control measures (eg willow spiling).	New methods of working which have less impact on the river system whilst ensuring protection from flooding.
b	Review, using the Flood Defence Management System (FDMS), the cost/ benefit of undertaking maintenance works on main rivers of the Wear area. Target date for 60% of rivers completed is March 1998, and for 100% completion is March 1999.	Resources are targeted at areas where most benefit would be derived from maintenance works.
c	In accordance with the Agency's "Policy and Practice for the Protection of Floodplains" and with close liaison with the local planning authorities, ensure that development within the floodplain is controlled to reduce the risk of flooding (see Issue 1 and Section 5.9).	Effectiveness of floodplains for flood defence and environmental purposes secured and, where necessary, restored.
d	Produce Annual Maintenance Programme/ Specification and ensure that full account of the Agency's conservation duties are incorporated within the programme.	Methods of working will take account of conservation needs and will be more sustainable.
e	Prepare Section 105 Surveys to define the nature and extent of flood risks from information provided by local authorities. Surveys are carried out in accordance with the prioritisation given to the named areas.	Up-to-date information available.
f	Prepare a 10 year capital works programme for those areas where flooding can only be alleviated by construction of defences. Undertake cost/benefit analyses and environmental impact assessments to determine viability of works. Particular areas known to be at risk from flooding are shown below.	Improved protection for flood prone areas. Ensure fulfilment of statutory conservation duty.
g	Set up a formal project to look into the use of 'source control' methods which mimic the natural response to rainfall (see Issue 1).	• Improved methods to deal with surface water run-off. • More sustainable techniques used to prevent flooding from run-off. • Pollution from run-off reduced.
h	Complete Water Level Management Plans for Witton-le-Wear and Butterby Oxbow Sites of Special Scientific Interest (SSSIs) (see Section 5.9).	• Assists in ensuring appropriate key water levels are safeguarded at SSSIs where the Agency is the 'operating authority'.

Who's Involved

Environment Agency, landowners, local authorities, MAFF, English Nature.

Background

Capital Works

Where development has taken place in the natural floodplain, properties will be at risk from flooding unless works are undertaken to reduce this risk. In the Wear catchment, areas known to be at risk of flooding are:

- River Wear at Batts Terrace, Bishop Auckland;
- Lumley Park Burn/River Wear at Shincliffe.

It is neither practical, cost effective nor environmentally acceptable to protect all vulnerable properties. However, where the Agency's powers and funding permits, we will undertake a priority-based programme to provide protection to reduce the risk for people and property against flooding. This is achieved by the construction and maintenance of flood defences, through environmentally acceptable maintenance of the main river system, and by provision of effective and timely warnings.

Flood Defence Management System

The Flood Defence Management System (FDMS) has been introduced which allows the Agency to review the cost/benefit of undertaking maintenance works on all main rivers.

Section 105 Surveys

Section 105 surveys are currently being undertaken which will help to define floodplains, allowing development to be targeted away from flood risk areas.

Protection of Floodplains

The need to protect floodplains has not always been recognised and these areas have sometimes been subjected to inappropriate development. Rivers and their floodplains are finite resources which need to be managed in accordance with the principles of sustainable development. The Agency has recently published its "Policy and Practice for the Protection of Floodplains", which contains its policy statements on development within the floodplain (see Issue 1).

Water Level Management Plans

Recent guidance has been issued by the Government on the preparation of Water Level Management Plans (WLMP) for Sites of Special Scientific Interest or other areas of high ecological or landscape importance. Where the Agency is the operating authority, we will liaise with English Nature to prepare a plan to ensure appropriate key water levels are safeguarded.

There are two SSSIs in the Wear area which have been identified as requiring WLMPs in order to provide a means by which the water level requirements for a range of activities in a particular area, including agriculture, flood defence and conservation, can be balanced and integrated. The sites are Witton-le-Wear and Butterby Oxbow SSSIs. An Interim Management Statement has been prepared for both.

Further details on these topics can be found in Sections 5.9 and 6.2 of Part 2.

Issue 18 Flood Warning

Irrespective of attempts to minimise the risk from flooding through the implementation of various policies and actions, flooding can occur and, on occasion, represents a risk to human life.

Objective

- To reduce the risk and provide timely warning systems for people and property against flooding from rivers and sea..

No	Proposals/Actions needed	Reasons/Advantages
a	Undertake a programme of reviewing the Wear catchment to determine hydrological character and forecasting techniques.	Better forecasting techniques would allow more accurate and timely flood warnings to be given.
b	Identify sites for new telemetry stations and include in three year Capital Programme.	Improved data for forecasting and monitoring of river levels.
c	Update the Flood Warning procedures to take account of new/ improved data and new methods.	Up-to-date Flood Warning procedures always in place. Ensures accuracy of flood warning procedures.
d	Review of Flood Defence staffing levels to allow adequate cover for flood events. Ensure nominated staff are fully trained to carry out flood warning.	Ensures sufficient staff available to cover flood events.

Who's Involved

Environment Agency, local authorities, County Council and Unitary Authority Emergency Planners, general public.

Background

The Agency operates a 24 hour, 7 day a week flood warning system that provides a warning service for specific properties and locations that are at risk from flooding or the overtopping and/or breaching of defences.

The Agency is the lead authority in disseminating warnings to the Emergency Services, local authorities and the public. This involves the use of specialist technology in addition to the cooperation and assistance of the media and local authorities.

At times of high water levels the Agency patrol defences, operate flood defence structures, remove blockages and carry out any emergency repairs required, using our In-House Emergency Workforce. Within the limits of our resources, assistance is given to the emergency services to alleviate flooding problems by sandbagging.

There are currently 4 rain gauges and 7 river gauges in the Wear LEAP area. These stations provide rainfall, and river level data via a telemetry system. Some reaches have no telemetry stations, thus preventing accuracy in forecasting.

Systems need to be in place to ensure that the Agency initiates efficient and effective responses to flood emergencies. Training of staff to use monitoring and forecasting techniques will need to be undertaken on a regular basis.

Further details on this topic can be found in Sections 5.9 and 6.2 of Part 2.

Issue 19 Effects of Structures in or Near Rivers

Within the Wear area there are many man-made structures built in and across river channels. These structures have an important impact on the way a river functions such as altering flows and gravel movements; affecting the position of areas of erosion, and deposition, and the location of pools and riffles; hinder migration of fish upstream; affect wildlife sites; affect recreational activities. In many cases the structures may be of historical importance (links with Issues 20 and 21).

Objective

- To work with others to ensure artificial barriers do not impede the natural migration of fish or obstruct the flow in the channel giving rise to flooding, whilst maintaining the structure's landscape, historical and recreational importance.

No	Proposals/Actions needed	Reasons/Advantages
a	Undertake a programme to: • identify structures; • determine ownership; • carry out condition surveys of structures, which will take account of flooding and safety risks involved; • identify legal liability for structures; • determine whether fish passage is affected; • identify health and safety implications; eg bridge safety assessments, culvert safety, public access safety.	Comprehensive information will provide: • number, location and condition of structures; • information regarding if and how structures impede fish passage; • information on flood defence implications; • improved management of structures which impede flow. • identify structures important to recreation.
b	Undertake improvements to structures which impede fish passage (see above) in line with the Agency's Regional Fisheries Strategy.	• Improved fish passage for migrating fish, with improved stocks from successful spawning. • Potential losses are likely to be reduced as fish will not collect in high numbers at obstructions, making them attractive targets for illegal fishing activity.
c	Work in partnership with other interested parties to fund the above and any subsequent improvements.	Cooperation between the Agency and other bodies should assist in minimising cost of work needed.

Who's Involved

Environment Agency, landowners, local authorities, angling clubs, recreation groups, British Canoe Union, English Heritage.

Background

Structures within the Wear LEAP area in, over, or under the river channel include bridges, weirs, pipelines and culverts. These structures have an impact on the surroundings in a number of ways including river flows, wildlife and habitat, fish passage, recreation, heritage and landscape. As such they must be safe, well maintained and well designed in a manner appropriate to their surroundings. Structures listed for their heritage and/or landscape value require special consents prior to any works being undertaken.

Existing and new structures can affect the free flow of a watercourse, giving rise to potential flooding causing erosion and depositional problems. Existing structures may cause an obstruction to the free passage of fish. Fish congregating below an obstruction may be subjected to environmental stresses which may make them more susceptible to diseases and illegal poaching. It is a requirement under the Salmon and Freshwater Fisheries Act 1975 that any new structures built incorporate suitable facilities to ensure fish can move freely under all flow conditions. In addition, existing structures that contain a fish pass must be maintained in proper working order by the owner.

Further information on this topic can be found in Sections 5.11 and 5.12 in Part 2.

Issue 20 Management of River and Wetland Habitats

Rivers and wetlands are valuable environmental and landscape resources within the Wear area. These features provide a wide variety of habitats for wildlife from upland cold water, fast-flowing streams to lowland slow-flowing wide and deep rivers, marshy wetland areas, and ponds. In addition rivers and wetlands are of fundamental importance to the local economy through tourism associated with cultural heritage, landscape, wildlife, canoeing, shooting and angling. Many organisations and private individuals are affected by and involved in their management. This issue relates to the Agency's role in the management of the Wear's river habitats. This issue links with Issue 19.

Objective

- To work with others to maintain and enhance the diversity of river and wetland habitats.

No	Proposals/Actions needed	Reasons/Advantages
a	Continue funding Tyne Tees Farming and Wildlife Advisory Group (FWAG) Officer to provide advice to farmers and landowners on ways of protecting and enhancing river habitats.	• Protect and enhance river habitats. Development of partnerships between all bodies involved will improve links for future ventures.
b	Investigate opportunities to fund enhancements via indirect funding.	• Allow habitat enhancements to be implemented.
c	Offer provision of advice on habitat improvements with landowners and angling clubs. Help interested parties to produce fishery management plans.	• Provision of more up-to-date and accurate information for angling clubs, general public and other bodies will assist in improving the habitats within their control. • External bodies able to provide useful information for publication in mailshots.
d	To minimise the spread of invasive bankside plants: • raise awareness of the problems of giant hogweed, Japanese knotweed and Himalayan balsam with the general public • continue surveys for invasive bankside species by staff • carry out control on any Agency-owned or managed sites • encourage control by riparian owners and other interested parties, once priority sites for control have been established.	• Provision of detailed data on location and type of invasive plant. • Protect and improve riverbank habitats.

Who's Involved

Environment Agency, local authorities, English Nature, The National Trust, Countryside Commission, Wildlife Trusts, angling clubs, landowners, FWAG, MAFF, recreation groups, British Canoe Union.

Background

In the past river corridors have often been used intensively with little knowledge or thought for the long term implications. Urbanisation has led to some straightened channels and intensive agricultural methods can lead to overgrazing, trampling and cultivation of land right up to bank edges. Through these processes bankside vegetation is lost, the river's structure can be damaged, becoming gradually wider and shallower through increased erosion, and the natural processes and functions of the river are destroyed. The decline in habitat quality of riverbanks, and rivers themselves affect fish and wildlife populations so that diversity and abundance is dramatically reduced.

This process is not irreversible, and can be relatively quick and easy to repair to some degree. Allowing riverside vegetation to regenerate has many benefits in that it:

- allows bank structures to strengthen and a narrower, deeper channel to be restored;
- allows an increase in organic input such as leaf litter as a significant food source for invertebrates and fish;
- reduces erosion from banksides and the river bed thus reducing siltation in other parts of the system;

- provides shelter for wildlife and linkages between isolated habitats thus increasing biodiversity;
- increases landscape value of the river corridor;
- can assist in reducing diffuse pollution.

A number of grants and subsidies currently exist to encourage farmers to use methods likely to bring wildlife benefits. Recognising this, the Agency has part-funded a Farming and Wildlife Advisory Group (FWAG) Officer for the Tyne-Tees area who provides farmers with advice on how to integrate farming and conservation. The 'set asides' scheme, MAFF's '*Habitat Scheme*' and the '*Countryside Stewardship Scheme*' which can provide grant payments to farmers to manage land in a way sympathetic to wildlife and fisheries (see Section 5.12 in Part 2).

Invasive Plants

Several alien plant species are becoming increasingly widespread, principally Himalayan balsam, Japanese knotweed, and giant hogweed. Giant hogweed is a particular problem as it produces large amounts of seed and is also a health hazard, causing severe irritation and blistering of the skin on contact. Within the Wear LEAP area this species has established in various locations.

Further detail on these topics can be found in Sections 5.10 and 5.12 of Part 2.

Issue 21 Fisheries

Fisheries in the Wear area are important, with many organisations and individuals involved in their management. This issue relates to the Agency's role in managing fisheries in the Wear area and is linked to Issue 19 and 20.

Objective

- To maintain, improve and develop freshwater fisheries in the Wear area.

No	Proposals/Actions needed	Reasons/Advantages
a	To develop the River Wear Salmon Action Plan in 1997.	Salmon stocks and their environment can be managed to optimise recruitment to freshwater fisheries, covering all aspects of fisheries on all watercourses, including: • habitats; • angling; • obstructions; • stocking and survey programme.
b	Determine the need for fish counters, locate suitable sites, and examine the feasibility and resource implications of counter installation.	Fish counters would give enhanced information leading to better management of the fishery. This would be subject to availability of funding and subject to cost benefit analysis.
c	Undertake annual juvenile salmonid surveys.	Surveys provide an indication of any changes and trends in juvenile populations, and can be used to target habitat improvement schemes effectively, and to assess their effects.
d	Undertake coarse fish monitoring surveys to provide management information.	Improved knowledge of coarse fish populations will allow targeting of habitat improvements and other methods of increasing populations to be undertaken.
e	Inform interested parties of the Agency's policy towards protected fish-eating birds eg herons, cormorants and goosanders.	The Agency will not support killing of these birds until serious damage has been established and killing proven to be the most effective management procedure.
f	• Continue to target anti-poaching activities on specific areas. • Ensure sufficient resources are available to protect improving populations.	Minimise poaching activity.
g	Develop a programme of surveys to provide information on distribution and status of brown trout populations.	Improved knowledge regarding brown trout populations will allow targeting of habitat improvements and other methods of increasing populations to be undertaken.

Who's Involved

Environment Agency, angling clubs, landowners.

Background

The River Wear is important as a coarse and game fishery.

Salmon Action Plan

Through the process of developing Salmon Action Plans, salmon stocks and the environment in which they live can be managed to optimise recruitment to freshwater fisheries. This is achieved by setting targets for spawning escapement, ie the number of fish returning to spawn. This is a major strategy which will look into all aspects of fisheries including habitats, angling, obstructions, stocking and survey programme, and will cover all watercourses. The project will look at the development of a scientific approach to salmon management on a catchment basis.

Fisheries Information

In order to effectively manage both coarse and game fisheries data are required on the status of fish populations. This enables trends to be established, and the response to environmental change can be monitored and managed. There are a variety of methods which can be utilised to achieve this:

- A fish counter is installed on Framwellgate weir which provides information on the number of returning salmonids, and the timing of their return to freshwater. Monthly totals are available on request.

- Electric fishing surveys to monitor juvenile salmonid populations are undertaken annually in the catchment. They will be continued to assess spawning success and to monitor changes and trends in the populations, and to allow the effective targeting of habitat improvement works.

Fish-eating birds

There has been a great deal of publicity in recent years about fish-eating birds, particularly cormorants and goosanders, and their effect on the fish populations. The Agency will not support killing of these birds until serious damage has been established and killing proven to be the most effective management procedure.

Further details on this topic can be found in Sections 5.11 and 5.14 of Part 2.

Issue 22 Biodiversity Action Plans

As part of the UK Biodiversity Action Plan (BAP) the Agency has a responsibility to coordinate action to protect otters, water voles and native crayfish within the Wear area. In the future other species may be added to this list. There are many other species in the Wear area identified in the UK Biodiversity Action Plan and in order to coordinate action a Local Biodiversity Action Plan is proposed. The Agency will need to be involved in this initiative.

Objective

- To assist in or lead the development and implementation of Action Plans for those species for which the Agency is given responsibility under the UK Biodiversity Action Plan and to assist in the development and implementation of Local Biodiversity Action Plans.

No	Proposals/Action needed	Reasons/Advantages
a	Collaborate with the Wildlife Trusts to undertake a survey programme to establish the distribution of the water vole.	Will enable necessary actions to be identified to protect this endangered species and help to fulfill international agreement.
b	Undertake survey programmes on the distribution of the native crayfish.	Will enable necessary actions to be identified to protect these endangered species and help to fulfill international agreement.
c	Continue work on the conservation of the otter. Extend collaborative project with the Wildlife Trusts.	Will build on the considerable work already undertaken on otter conservation. Previous work has developed a good relationship with local landowners.
d	Input into Local Biodiversity Action Plans being progressed by the local authorities and the Wildlife Trust.	Assist in implementing the UK Biodiversity Action Plan as a whole and ensure Agency's work is coordinated with other actions.
e	Following the baseline surveys described above; local Action Plans may be required for some of these species. These will be prepared in discussion with conservation organisations.	Better decision making in undertaking or consenting works. Better targeting of resources.
f	As other species are added to the Agency's list other Action Plans may need to be incorporated.	Assist in implementing the UK Biodiversity Action Plan.

Who's Involved

Environment Agency, Wildlife Trusts, local authorities, English Nature.

Background

The UK Biodiversity Action Plan (BAP) identifies a number of species relevant to the Wear area which require pro-active conservation action. In the Wear LEAP area the Agency is the contact point or lead agency for the otter, native crayfish and the water vole. An important first step in the conservation of these species will be the identification of actions based on good information regarding population status. Information related to the distribution and status of the otter is currently being compiled by Durham Wildlife Trust. Water vole surveys undertaken in 1996 indicated that these species only occur at a limited number of sites in the Wear area. The native crayfish is presently known to occur at a small number of stillwaters.

It is envisaged, both nationally and locally, that many of the targets and objectives of the species action plans will be met through existing initiatives and projects, aided by better and more focused integration of activities, but some species may require fresh and specific efforts to conserve them.

The Agency is committed to playing a full and proper role in the conservation of additional species or habitats listed either in the UK BAP, or in the various local BAPs, where resources allow.

The Biodiversity Action Plan for County Durham is currently being developed by Durham Wildlife Trust. This will provide a focus for target-led species and habitats of both local and national importance .

Further details on this topic can be found in Sections 5.12 and 6.4 of Part 2.

Issue 23 Special Areas of Conservation and Special Protection Areas

To date there are no designated Special Areas of Conservation (SACs) under the European Habitats and Species Directive or Special Protection Areas (SPAs) under the Birds Directive in the Wear LEAP area. However, English Nature is in the process of putting forward a number of sites for consideration. This issue relates to the Agency plans to assist in protecting these sites.

Objectives

- To ensure the favourable conservation status of these sites is maintained.
- To ensure that the Agency's duties as a relevant authority under these Directives are fulfilled.

No	Proposals/Action needed	Reasons/Advantages
a	Ensure that the Agency, in undertaking or authorising any work affecting an SPA or SAC maintains the site's 'favourable conservation status'. Database of sites to be set up.	Ensure the favourable conservation status of these sites is maintained.
b	Review all consents, licences and authorisations affecting proposed and designated SACs and SPAs between 1998 and 2004.	Ensure the favourable conservation status of these sites is maintained.
c	Agree with English Nature a joint approach to the management and consenting of works affecting these sites.	Model has been developed through the river Sites of Special Scientific Interest (SSSIs) programme. Important to help the Agency in meeting its duties under the Directive.

Who's Involved

Environment Agency, English Nature, National Trust, Countryside Commission, the Wildlife Trusts, local authorities.

Background

The European Habitats and Species Directive was enacted into UK law in 1994. The UK Government is required to identify sites of importance on a European scale by 1998. These sites will be known as Special Areas of Conservation (SACs) and are generally already designated as Sites of Special Scientific Interest (SSSIs). The Directive also applies to sites designated as Special Protection Areas (SPAs) under the Birds Directive. The Agency was identified under the Regulations as both a 'relevant' and a 'competent' authority. This requires the Agency to ensure that in carrying out or authorising any work affecting an SPA or SAC that the site's 'favourable conservation status' is maintained. In addition, between 1998 and 2004, the Agency is required to review all consents affecting these sites to assess impacts on species or features which have been identified as being of special importance.

There are currently no designated SPAs or SACs in the Wear LEAP area. English Nature is in the process of putting forward a number of sites for consideration.

The sites currently proposed are:

(a) Castle Eden Dene (pSAC) - Yew dominated woodland.

(b) Thrislington (pSAC) - Dry grasslands and scrubland on limestone.

(c) North Pennine Dales Meadows (pSAC) - series of SSSIs demonstrating mountain hay meadows.

(d) North Pennine Moors (pSAC) - series of SSSIs with a high diversity of habitat/species of European importance, including blanket bog, hard water springs depositing lime, calcium-rich spring water fed fens and high altitude plant communities associated with areas of water seepage.

(e) North Pennine Moor (pSPA) - series of SSSIs which support significant numbers of species listed in the EU Birds Directive (under Articles 4.1 and 4.2) including merlin, golden plover, dunlin, curlew and redshank.

Further information on this topic can be found in Section 5.12 of Part 2.

Issue 24 Water-Based Recreation

Water-based recreation takes place in many areas of the Wear LEAP area. The Agency has a duty to promote the use of water and land associated with water for recreation however, we do not own any land in the Wear area on which to do this. To fulfill this duty it is therefore necessary to liaise closely with local authorities, landowners and other interested parties so that we can work together on joint projects to promote water-based recreation where appropriate.

Objective

- To promote the use of water and land associated with water for recreation.

No	Proposals/Action needed	Reasons/Advantages
a	Liaise with local authorities, land owners, and other providers of recreation sites/ facilities.	• Ensure recreational activities and developments are environmentally sustainable. • Assists in advising providers about the strategic importance of facilities. Co-ordinate new developments to give all potential providers across the Wear area best value for money, whilst realising optimum potential for watersports and other recreational activity. • Assists in learning what providers regard as high priority work or major projects and whether any of these meet the criteria of the Agency's own priority list for jointly funding projects. • Investigate the potential of jointly producing or contributing to education and interpretation materials such as leaflets and boards, to promote good practice to recreational users and better understanding of the environment.
b	Liaise with recreation users representatives at all levels.	• Achieve greater understanding of the needs of all users regardless of their physical ability or level of technical expertise. • Learn what conditions users regard as essential for allowing their sport or other recreational activity to continue or to develop in future. • Advise users representatives about potential partnership organisations and sources of funding for future developments. • Offer the services of the Agency to act as an 'honest broker' to try and amicably resolve disputes between different user groups, or to represent the views of user groups to key providers where appropriate.
c	Investigate the potential for a canoe access agreement along the Agency's fishery on the River Wear at Eastgate.	• The Agency owns the fishing rights to approximately 7.2 miles of river bank but it does not own the land thereon. • The management of the Eastgate fishery is under review. • The Agency is required to consider making sites in its ownership available to the public for recreation, if appropriate.
d	Discuss the possibility of a canoe access agreement, based on the River Tyne Canoe Access Agreement which is a model of best practice for allowing canoeing and angling to co-exist.	• The River Tyne Canoe Access Agreement has proved very successful over the years and the rules are a good starting point for negotiating new access agreements on other rivers.

No	Proposals/Action needed	Reasons/Advantages
e	Review the work done by the Tyne and Wear Watersports Development Project (TWWDP) and discuss the project's future with the steering group and providers forum.	• Clarify details regarding the future management of completed access improvements and new facilities created under the auspices of the TWWDP. • Review the benefits of work already undertaken by the TWWDP. • Review reasons why some potential developments have not progressed. • Discuss implications of new Government policy and alternative sources of funding. • Assess the possibilities for the future of TWWDP.
f	Hold meetings of the Tyne Recreational Users Group and the Wear Watersports User Forum so representatives from all the recreational users of both estuaries can review work done to date and discuss the projects future	• Review the benefits of work done by the TWWDP already. • Assess the requirements to continue developing water based recreation in future. • Identify essential partners for future improvements to be successful. • Establish what sources of funding are available and who is eligible to apply for it. • Discuss what help, if any, the users representatives require in order to continue to develop water-based recreation on the Tyne and Wear estuaries.

Who's Involved

Environment Agency, British Canoe Union, River Wear Improvement Association, local authorities, landowners, recreation groups and other interested parties.

Background

Canoeing

Canoeing and angling are often perceived as conflicting forms of water-based recreation but this is not always the case. In the Tyne catchment the 'River Tyne Canoe Access Agreement' allows canoeists and anglers to co-exist in harmony on one of the best salmon rivers in England. This voluntary canoe access agreement has been so successful that it is now used as a model of best practice throughout the country and could be applied to the Wear area. Any canoe access agreement relies on canoeists learning the rules and abiding by them.

Tyne and Wear Watersports Development Project

The Tyne and Wear Watersports Development Project (TWWDP) has been successful and has already made significant improvement to access, facilities, co-ordination, training and promotion of watersports in Tyne and Wear. More improvements could be done but the future of the TWWDP is uncertain due to changes within the three major funding parties of the project. The Tyne and Wear Development Corporation will cease to exist in April 1998 and both the English Sports Council and the Agency have undergone major re-organisations recently. Both now have additional priority responsibilities competing for their limited resources. There are alternative potential sources of funding such as the National Lottery and European Union but other partners in the TWWDP would be required to play a more prominent role in order to secure these funds.

Further details on this and related topics can be found in Section 5.13 of Part 2.

Issue 25 Environmental Awareness and Education

This issue looks at how the Agency could work with schools, other educational establishments and other organisations in the Wear area to develop in young people an understanding of, and encourage a caring attitude for, the environment.

Objective

- To generate environmental awareness in young people and understanding of how they can help to improve the environment for future generations.

No	Proposals/Action needed	Reasons/Advantages
a	Work with others to target: • school children; • further and higher education groups; • youth groups, clubs and organisations to encourage involvement in protecting the environment.	Effective use of resources by cooperating on educational projects.
b	Investigate the production of localised educational materials to assist teachers with environmental education.	Provide teachers with local environmental education material.
c	Discuss with other organisations and businesses possibilities of cooperating on environmental education projects.	Effective use of resources by cooperating on educational projects.
d	Discuss with local universities and colleges ways to improve curriculum and course contents to generate environmental awareness and responsibility. This should include all relevant courses not only environmental courses.	Ensure environmental issues are covered in relevant university and college courses. For example engineering, architecture, business schools etc.

Who's Involved

Schools, colleges and universities, Environment Agency, local authorities, other agencies and businesses.

Background

Education is key to developing a more environmentally aware and responsible society. Education campaigns for various sectors of society have featured in many of the issues outlined in this report. Better environmental awareness in today's industries, businesses, farms, and households can help in protecting and improving the Wear's environment now. However, in the longer term it is the next generation of decision makers who will be able to contribute more to the achievement of sustainable development. The Agency must therefore, work closely with local education professionals to generate environmental awareness in young people and understanding of how they can help to improve the local environment for future generations.

4 Overview of the Wear Area

4.1 Geology

The geology of the Wear LEAP area (see Map 2) comprises strata of Carboniferous to Permian age, widely overlaid by recent glacial deposits. The oldest rocks exposed in the area are the Middle Limestone group of the Carboniferous age and these outcrop in upper Weardale.

The Millstone Grit and Upper Limestone group form the highlands to the north and south of Weardale. The thicker limestone beds in this group are quarried for use in cement and lime production, as roadstone and railway ballast, and in powdered form for agricultural purposes. Limestones of high chemical purity are used as a flux in the iron and steel works of Teesside. Non-ferrous ores occur in the Carboniferous rocks in the north of the Wear area. These minerals occur as veins along fissures and as 'flats', in which limestone has been replaced laterally by ore-bearing solutions emanating from adjacent fissures. These veins are probably associated with the intrusion of the Weardale granite that lies at depth beneath the Carboniferous Limestones and has been proved by the Rookhope borehole. Minerals of economic value include lead and zinc and their associated spar minerals.

The Millstone Grit and Upper Limestone group are overlaid by the Coal Measures, also of the Carboniferous age and found throughout much of Durham. The Coal Measures consist of a cyclic sequence of coal, shale and sandstone, the coal being important in the economic growth of the region.

The Magnesian Limestone, of Permian age, outcrops in the east of the Wear area. Parts of this limestone are true Dolomite and contain more than 40% magnesium carbonate. The outcrops are worked in several quarries to the south of South Hylton, the main concentration being to the south of Coxhoe.

4.2 Hydrogeology

Aquifers are geological strata which contain groundwater in exploitable quantities. The study of hydrogeology is concerned with the way in which groundwater flows or is stored in aquifers and the physical and chemical changes resulting from this and its interaction with the parent rock.

Major aquifers are highly permeable and productive rock formations, generally fractured, and capable of supporting large abstractions. Minor aquifers producing smaller quantities are important for local supplies.

The major aquifer in the Wear area is the Magnesian Limestone that outcrops in Sunderland to the east of the area. It is extensively used for public water supply. Chemically the water is hard and saline incursion has affected water quality along the coast in places where excessive abstraction has occurred in the past.

The Middle Limestone, Millstone Grit and Upper Limestones form minor aquifers. The thicker sandstones and limestones represent an important source of water for the rural communities of the upper Wear area. Where these strata outcrop springs are abundant. Numerous private water supply boreholes have been drilled to exploit the aquifers, with the water quality being generally good.

The sandstones of the Coal Measures are capable of storing and transmitting appreciable volumes of water however, water levels have been greatly affected by coal mining. Groundwater quality in parts of the Coal Measures is poor, waters being often acidic, high in iron and dissolved solids.

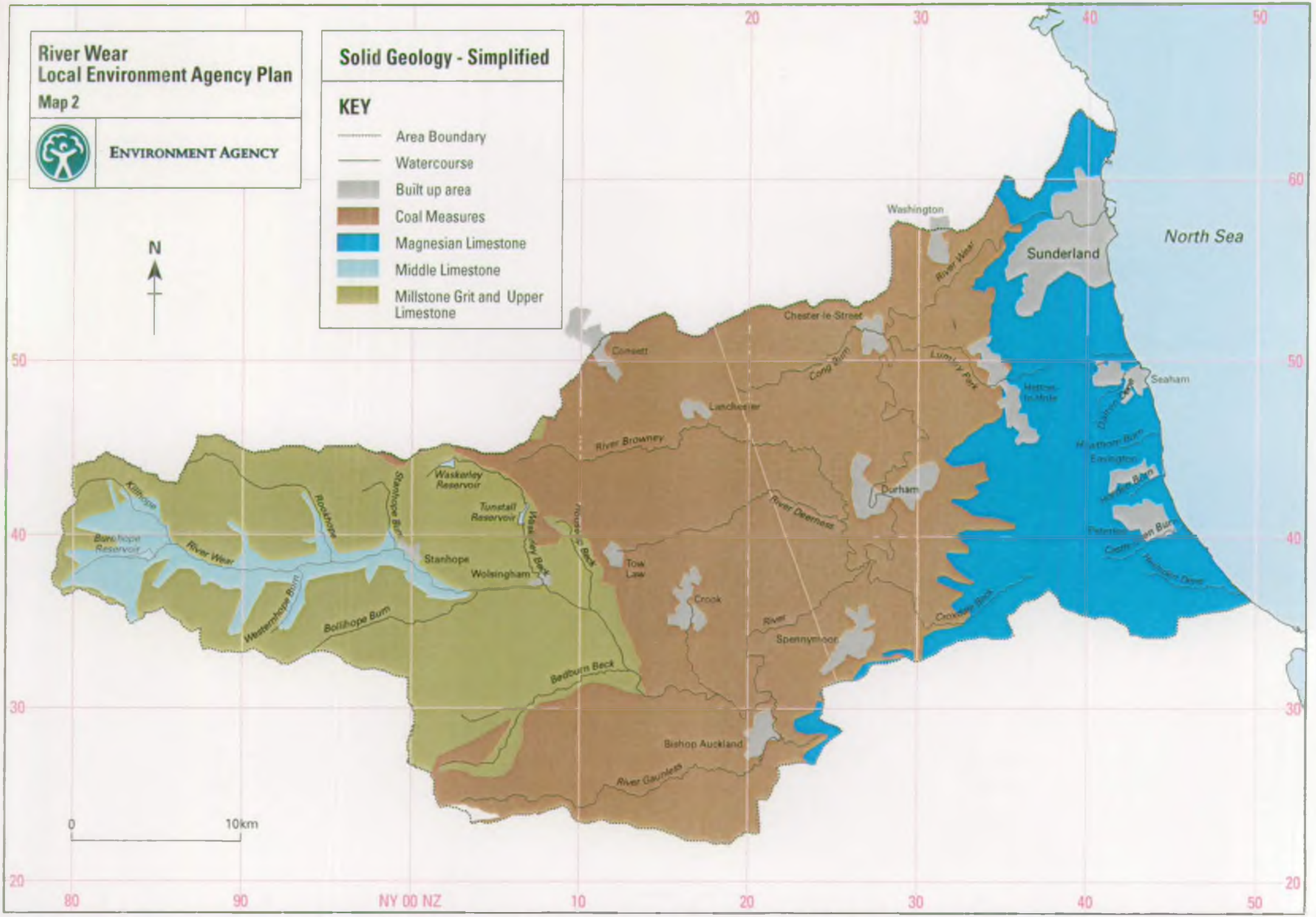
4.3 Topography

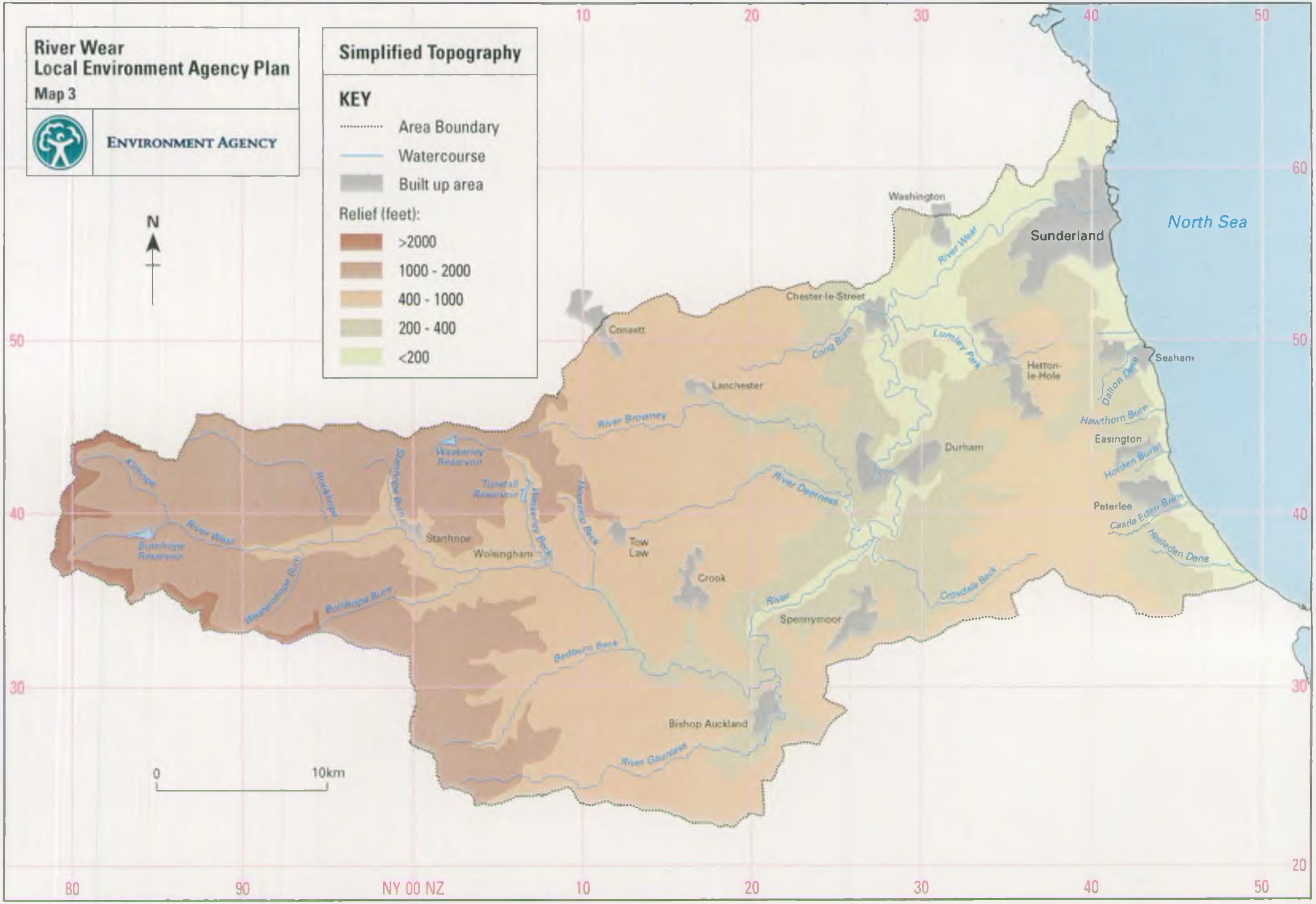
The topography of the Wear LEAP area (see Map 3) varies from 620 metres in the uplands to the west to sea level in the east. A substantial proportion of the extensive upland area is over 300 metres.

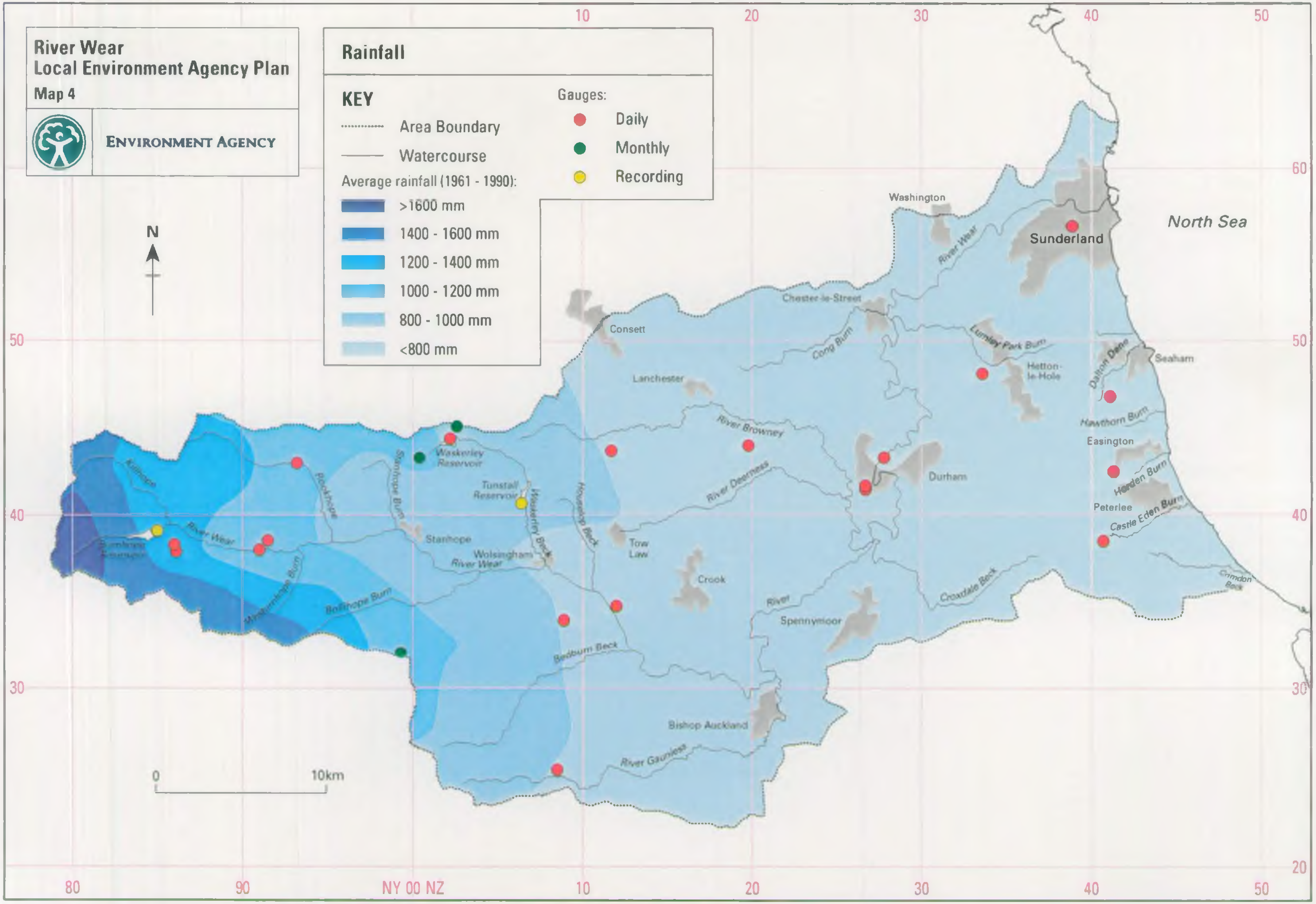
4.4 Climate

The two important influences on climate in the Wear area are the North Sea and the Pennine hill barrier. Sea breezes frequently blow across the coastal part and the orientation of the valleys causes some funnelling of the prevailing westerly winds. The warming effect of air descending from the Pennines (sometimes called the fohn) breaks up much of the frontal cloud over the Wear valley. Although the average area rainfall is approximately 820mm it ranges from 1,800mm around Burnhope Seat in the upper Wear to about 630mm near the coast (see Map 4). The lowlands receive most of the rainfall on easterly or north easterly airstreams approaching from the North Sea.

Annual evapotranspiration ranges from 350mm in the uplands to up to 500mm in lower areas. The difference between annual rainfall and evapotranspiration gives an indication of the effective rainfall available for stream flow and groundwater recharge. For example, although on average August has the highest rainfall, it often generates the lowest flow due to evaporative losses, especially in the lowlands.


River Wear
Local Environment Agency Plan
Map 2
ENVIRONMENT AGENCY
Solid Geology - Simplified
KEY
Area Boundary
Watercourse
Built up area
Coal Measures
Magnesian Limestone
Middle Limestone
Millstone Grit and Upper Limestone
N
North Sea
Washington
Sunderland
Chester-le-Street
Consett
Lanchester
Durham
Seaham
River Wear
River Browney
River Deerness
Waskerley Reservoir
Tunstall Reservoir
Stanhope
Wolsingham
Bollihope Burn
Bedburn Beck
Crook
Tow Law
Bishop Auckland
River Gaunless
Burnhope Reservoir
0
10km
80
90
NY 00 NZ
10
20
30
40
50
60


River Wear
Local Environment Agency Plan
Map 3
Environment Agency
Simplified Topography
KEY
Area Boundary
Watercourse
Built up area
Relief (feet):
>2000
1000 - 2000
400 - 1000
200 - 400
<200
N
0
10km
North Sea
Sunderland
Washington
River Wear
Chester-le-Street
Consett
Lanchester
Cong Burn
Lumley Park
Hetton-le-Hole
Seaham
Dalton Dene
Hawthorn Burn
Easington
Horden Burn
Peterlee
Castle Eden Burn
Hesleden Dene
River Browney
Durham
River Deerness
Waskerley Reservoir
Tunstall Reservoir
Stanhope Burn
Waskerley Beck
Rookhope
Killhope
Burnhope Reservoir
Stanhope
Wolsingham
Tow Law
Crook
Spennymoor
Croxdale Beck
Wellhope Burn
Bollihope Burn
Bedburn Beck
Bishop Auckland
River Gaunless
80
90
NY 00 NZ
10
20
30
40
50
60


River Wear
Local Environment Agency Plan
Map 4
Environment Agency
Rainfall
KEY
Area Boundary
Watercourse
Average rainfall (1961 - 1990):
>1600 mm
1400 - 1600 mm
1200 - 1400 mm
1000 - 1200 mm
800 - 1000 mm
<800 mm
Gauges:
Daily
Monthly
Recording
N
0
10km
North Sea
Sunderland
Washington
River Wear
Chester-le-Street
Consett
Cong Burn
Lumley Park Burn
Hetton-le-Hole
Seaham
Dalton Dene
Lanchester
River Browney
Hawthorn Burn
Easington
Durham
River Deerness
Horden Burn
Peterlee
Castle Eden Burn
Waskerley Reservoir
Tunstall Reservoir
Stanhope Burn
Rookhope
Killhope
Waskerley Beck
Houselop Beck
Stanhope
Wolsingham
River Wear
Tow Law
Crook
Spennymoor
Croxdale Beck
Crimdon Beck
Bollihope Burn
Middlehope Burn
Bedburn Beck
Bishop Auckland
River Gaunless
NY 00 NZ
10
20
30
40
50
80
90
60
50
40
30
20

4.5 Key Details

Area: 1,321 square kilometres
Estimated Population: 478,000

Main Centres of Population (1991 census): (see Map 5)

Sunderland	190,000	Washington	62,000
Houghton-le-Spring	38,000	Durham City	30,000
Seaham	23,000	Peterlee	22,000
Chester-le-Street	19,800	Spennymoor	19,500
Bishop Auckland	17,700	Crook	12,500
Willington	6,500	Brandon	6,000
Lanchester	5,000	Usher Moor	4,300
Fence Houses	3,500	Langley Moor	3,100
West Auckland	2,800	St Helens (Auckland)	2,500
Shiney Row	2,500	Wolsingham	2,100
Stanhope	1,500		

Local Authorities:
City of Durham District Council
City of Sunderland Metropolitan Council
Chester-le-Street District Council
Derwentside District Council (part)
Durham County Council (part)
Easington District Council (part)
Gateshead Metropolitan Borough Council (part)
Hartlepool District Council (part)
Sedgefield District Council (part)
South Tyneside Metropolitan Borough Council (part)
Teesdale District Council (part)
Wear Valley District Council (Part)

Length of Main River: 182.88 kilometres

Length of flood defence on Main River: (see Map 14)
Tidal: 1.52 kilometres
Fluvial: 27.84 kilometres

Length of Coast (approximately): 24 kilometres (from South Shields to Blackhall Colliery)

Sites of Special Scientific Interest: 63 (see Map 17)

Scheduled Ancient Monuments: 65

National Nature Reserve: Castle Eden Dene

Landscape Designated Areas:

Area of Outstanding Natural Beauty: North Pennines

Fisheries: (see Map 16)

Length of water designated under EC Directive Freshwater Fisheries (78/659EEC):
Salmonid: 148.8 kilometres

Waste Management: (see Maps 11, 12 and 13)

Landfill Sites:	34
Metal Recycling Sites:	13
Motor Vehicle Dismantlers:	9
Transfer Stations/Special Waste Storage:	26
Civic Amenity Sites:	15
Treatment:	1
Incinerators:	2

IPC Sites: 7 (see Map 7)

RAS Sites: 59

Abstraction Licences and Discharge Consents:

Licensed Water Abstractions: 74
Surface Water Authorised Abstractions: 62,501 TCMA
Groundwater Authorised Abstractions: 24,725 TCMA

Total Number of Discharge Consents: (see Map 10)

		Total	>250
Sewage Treatment Works	Northumbrian Water Limited	90	49
	Private	162	0
Sewage Pumping Stations		93	0
Industrial Effluent Discharges		103	1

River Flow Data:

Gauging Station	River	Dry Weather Flow (Q95) (m^3/sec)	Mean Flow (m^3/sec)	Mean Annual Flood (m^3/sec)
Burnhope Reservoir	Wear	0.092	0.620	-
Stanhope	Wear	0.496	3.670	121.900
Witton Park	Wear	1.253	7.770	196.100
Sunderland Bridge	Wear	2.011	11.200	221.300
Chester le Street	Wear	3.028	14.500	-
Bedburn	Bedburn Beck	0.157	1.220	25.400
Burn Hall	Browney	0.306	1.700	37.600

5 Uses, Activities and Pressures

5.1 Housing

General

Existing housing, new development or redevelopment of land for domestic purposes can have a significant impact on the environment: water supply; sewage; effluent; waste disposal; energy usage; flood defence; landscape; ecology can all be affected (see Figure 2).

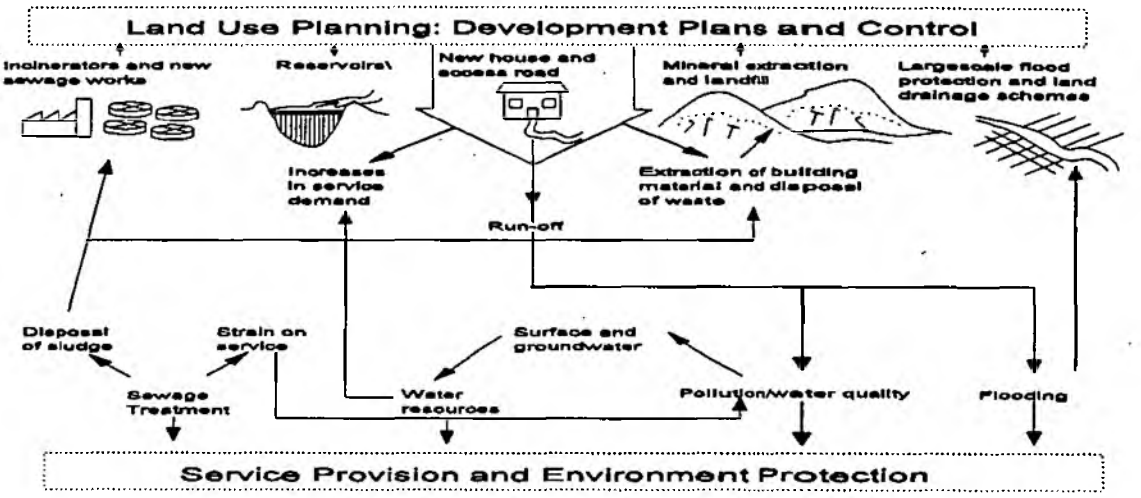


Figure 2 Diagram of the Interactions between Land Use and the Environment

The majority of developments are controlled through Development Plans, published by local planning authorities under Town and Country Planning legislation. These strategic plans take the form of County Structure Plans, District Wide Local Plans and Unitary Development Plans, which set the context for development in land use, planning and transportation. They identify areas for future residential, commercial and industrial development, and set out the policies against which planning authorities consider development proposals and land uses. The Agency is a statutory consultee for these plans. The Development Plans are prepared in accordance with the Regional Planning Guidance.

Regional Planning Guidance

There are currently two Regional Planning Guidance notes for the North East - one for Tyne and Wear and one for the rest of the region. They were issued by DoE after consultation with the Local Planning Authorities and the Agency and set out the following broad objectives:

- to promote economic prosperity;
- to conserve and enhance the environment;
- the regeneration and renewal of urban areas;
- rural diversification;
- to encourage efficient use of available resources and energy.

Role of the Environment Agency

Government planning guidance highlights the importance of communication between Local Planning Authorities and the Agency and the relationship between land use and environmental matters.

The Agency works to protect the environment from the harmful effects of development and to minimise flood risk. There are two main ways we can influence development:

- Through the ***planning*** system we can assist Local Planning Authorities to allocate land for development by commenting on local plans, identifying constraints and highlighting how the environment can be enhanced by sympathetic development. We will continue to advise on water and waste and air-quality related issues in our comments on Structure and District-wide Local Plans.

- We can advise Local Planning Authorities on the ***control*** of development by offering formal and informal comments to planning authorities on planning applications and development guides.

We consider individual development proposals in relation to the approved development plan, the final decision on planning matters rests with the planning authority. However, if the development:

- includes proposals for abstraction or impoundment of water or a discharge to water;
- entails work on or near a watercourse;
- is within 250 metres of a landfill site;
- introduces fish;
- is within 500 metres of a process subject to integrated pollution control.

then the Agency should be consulted to assess the appropriate consents or licences.

Local Perspective

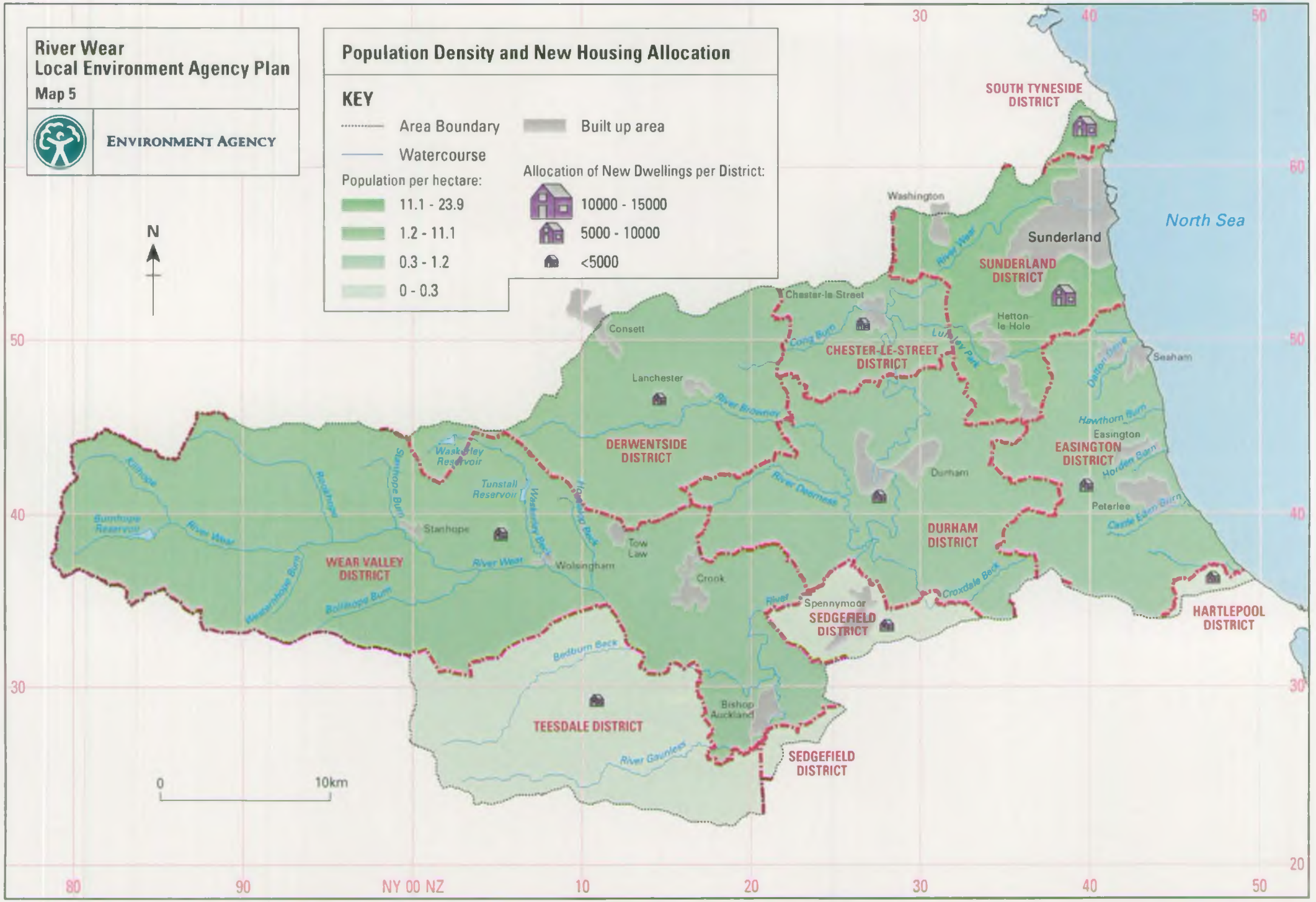
The current population density of the Wear area is shown on Map 5. Housing developments in the area have been influenced by past industrial activities, the most important being mining, ship building and shipping. Agriculture is the predominant land use in upper area, although in the past the area was important as a metal mining centre.

The numbers of houses allocated in the structure plans are shown on Map 5. Major developments are likely to be concentrated near towns and villages and may include improvements to transport infrastructure. These developments may influence the environment in a number of ways, care must be taken in their planning and construction to minimise any adverse effects. Many potential problems or areas of concern between new development and the environment can be dealt with by careful planning and implementation, as such the Local Planning Authorities have a key role to play in the long term protection of the environment (see Issue 1).

Local Authority	Plan Status
Derwentside	Local Plan - Adopted Jan 1997
Durham County Council	County Structure Plan - Deposit Draft Nov 1995 Modifications due by the end Summer 1997
Chester le Street	Local Plan - Consultation Draft March 1996 Deposit Draft anticipated July 1997
City of Durham	Local Plan - Adopted 1988 Under review consultation anticipated Summer 1997
City of Sunderland	Unitary Development Plan - deposit Draft Sept 1995 Inspector's report anticipated late 1997
Easington	Local Plan - Consultation Draft 1993 Deposit Draft anticipated Nov 1997
Sedgefield	Local Plan - Adopted Oct 1996
Teesdale	Local Plan - Consultation Draft Aug 1995 Deposit Draft anticipated end 1997
Wear Valley	Local Plan - Adopted March 1997

Table 1 Status of Development Plans in Wear LEAP area

Future developments are likely to be concentrated near present towns and villages. These developments may influence the environment in a number of ways, care must therefore be taken in their planning and construction to minimise any adverse effects. The Agency has a full and active dialogue with all the local planning authorities, at all levels of development control, from making comments on individual applications to providing policy inputs to Structure and Local Plans. The Agency participates in the planning process to protect the public and the environment from any adverse effects associated with development and will, therefore, oppose any specific development which conflicts with this purpose. Furthermore, the Agency will encourage Local Planning Authorities to adopt policies for protecting both the public and the environment. This issue is dealt with in Part 1 of the report in Issue 1.


River Wear
Local Environment Agency Plan
Map 5
ENVIRONMENT AGENCY
Population Density and New Housing Allocation
KEY
Area Boundary
Watercourse
Built up area
Population per hectare:
11.1 - 23.9
1.2 - 11.1
0.3 - 1.2
0 - 0.3
Allocation of New Dwellings per District:
10000 - 15000
5000 - 10000
<5000
N
0
10km
North Sea
SOUTH TYNESIDE DISTRICT
SUNDERLAND DISTRICT
CHESTER-LE-STREET DISTRICT
DERWENTSIDE DISTRICT
EASINGTON DISTRICT
DURHAM DISTRICT
WEAR VALLEY DISTRICT
SEDGEFIELD DISTRICT
HARTLEPOOL DISTRICT
TEESDALE DISTRICT
SEDGEFIELD DISTRICT
Washington
Sunderland
Chester-le Street
Hetton le Hole
Consett
Lanchester
Seaham
Easington
Peterlee
Durham
Stanhope
Tow Law
Wolsingham
Crook
Spennymoor
Bishop Auckland
River Wear
River Browney
River Deerness
Tunstall Reservoir
Waskerley Reservoir
Burnhope Reservoir
Hawthorn Burn
Horden Burn
Castle Eden Burn
Croxdale Beck
Bedburn Beck
River Gaunless
NY 00 NZ

5.2 Transport

General

Transportation is an integral part of our everyday lives. There are many modes of transport and the impact on the environment varies, the most significant being that of motorised transport. This has been accelerated by the increased number of vehicles since the 1960s.

There are three aspects of environmental impact from transport:

- exhaust emissions from burning fossil fuels: transport contributes to approximately 20% of Britain's total carbon dioxide emissions, most of which comes from road transport;
- noise pollution from the movement of traffic;
- construction of the infrastructure, ie roads, rail lines and airports.

The Agency is consulted by local authorities (see Section 5.1) when road schemes are planned to evaluate and make proposals on environmental impacts. Although we do not have direct control of transport, the effects of transport affect our duties as:

- large areas of impermeable surface on road schemes which drain to a single point, discharging into either a watercourse or to soakaways, may pose increased flood and pollution risks;
- pollution can occur as a result of accidental spillage or as a result of the cumulative effects of tyre and brake wear, vehicular emissions and the use of de-icing materials.

Local Perspective

Major infrastructure is shown on Map 6.

Roads

The major routes in the Wear area are provided by the two main north south links, the A1 and A19. These roads carry large volumes of traffic passing through the area. As the Wear area has a relatively low car ownership, the travel needs of many people have to be met by public transport.

Rail

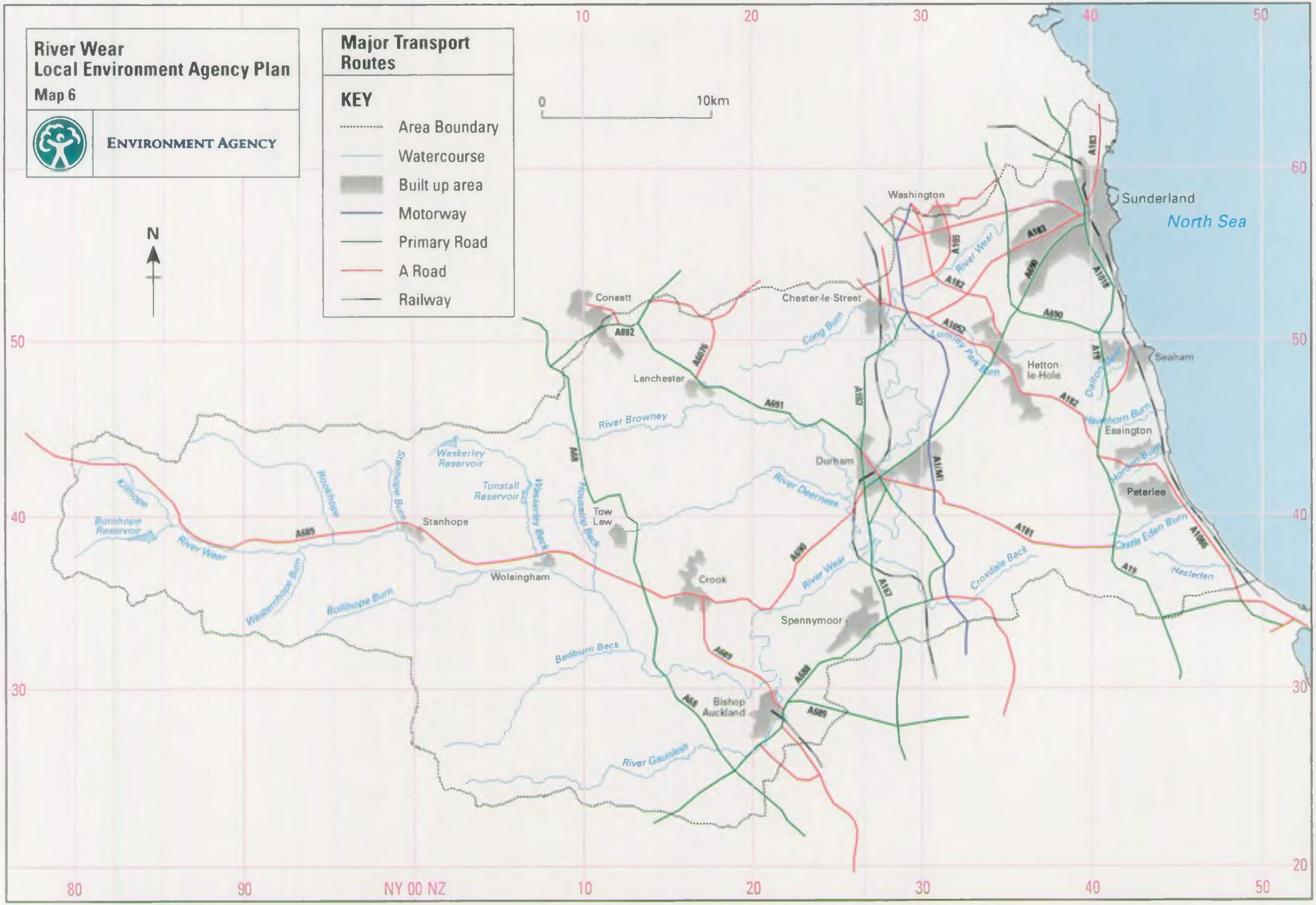
The rail network in the Wear area is limited to the two north south links. The main rail link is the East Coast Main Line from London in the south, passing through Durham City, before continuing on to the Highlands of Scotland. The other is the Darlington and Durham Coastal Service running through Easington District and Sunderland.

Sea

Sunderland and Seaham are the only ports in the area, Sunderland being the largest. The port of Sunderland has seen a decline in traffic of 28% even though the River Wear can be used by small craft as far west as Fatfield. The major commercial sector is at the harbour entrance and South Docks.

Air

There are two regional airports for both commercial and pleasure flights on the outskirts of the Wear area, at Newcastle to the north and Teesside to the south. These airports are accessible by public and private transport.


River Wear
Local Environment Agency Plan
Map 6
Environment Agency
Major Transport Routes
KEY
Area Boundary
Watercourse
Built up area
Motorway
Primary Road
A Road
Railway
0
10km
N
North Sea
Sunderland
Washington
Chester-le-Street
Consett
Lanchester
Seaham
Hetton-le-Hole
Easington
Peterlee
Durham
Stanhope
Tow Law
Wolsingham
Crook
Spennymoor
Bishop Auckland
River Wear
River Browney
River Deerness
River Gaunless
Bedburn Beck
Croxdale Beck
Cong Burn
Lumley Park Burn
Hawthorn Burn
Castle Eden Burn
Hesleden
Killhope
Burnhope Reservoir
Rookhope
Stanhope Burn
Waskerley Reservoir
Tunstall Reservoir
Waskerley Beck
Houselop Beck
Waterhope Burn
Bollihope Burn
A689
A68
A692
A6076
A691
A690
A167
A1(M)
A181
A19
A1086
A182
A1052
A183
A195
A1018
A688
NY 00 NZ
80
90
10
20
30
40
50
60

5.3 Industry

General

The Agency's responsibilities include the regulation of large and complex prescribed industrial processes and the regulation of the storage, use and disposal of radioactive substances.

Controlled Industrial Processes

The Agency is responsible for regulating the most complex and potentially polluting industrial processes. In order that we can carry out our regulatory duties, we use a system known as Integrated Pollution Control (IPC). This system requires the use of best available techniques not entailing excessive cost (BATNEEC) to prevent the release of particular substances into the environment or, where this is not practicable, to minimise their release and render them harmless.

Two lists of processes have been prescribed by regulation for control:

- Part A processes are controlled under IPC by the Agency. These are potentially the most polluting industrial processes, including large combustion plant, iron and steel manufacturing, the chemical industry, solvent recovery, and incineration plants. These processes are issued with authorisations, which incorporate built-in improvement programmes.

- Part B processes are controlled by the local authorities under a system of Local Authority Air Pollution Control. These processes are only controlled for their releases to air, and include paint spraying, small foundries, and small combustion plant. Local authorities also deal with a wide range of other forms of pollution such as odours, smoke from outdoor burning and noise pollution under Statutory Nuisance regulations.

Radioactive Substances

Hospitals, research centres and manufacturing sites that use and dispose of radioactive materials are issued with a certificate of registration and/or authorisation from the Agency under the Radioactive Substances Act 1993. The Agency applies a criterion that radioactive releases to air, water and land shall be as low as reasonably possible, and ensures that the best practicable means are implemented to achieve this. Practices giving rise to radioactive waste must be justified, ie, the need for the practice must be established in terms of its overall benefit.

Local Perspective

The Wear area is closely linked with that of the Northern Region as a whole, and there are significant interrelationships between Tyneside and Teesside in terms of employment and communication links.

The traditional industries of the Wear area have undergone a major restructuring in recent years, predominately due to the decline of the coal industry. The manufacturing sector has also declined but not to the same extent as the rest of the country. In line with national trends, the service sector has expanded significantly and this has resulted in the need for high quality sites in attractive settings. The Central Corridor has the potential to attract significant investment.

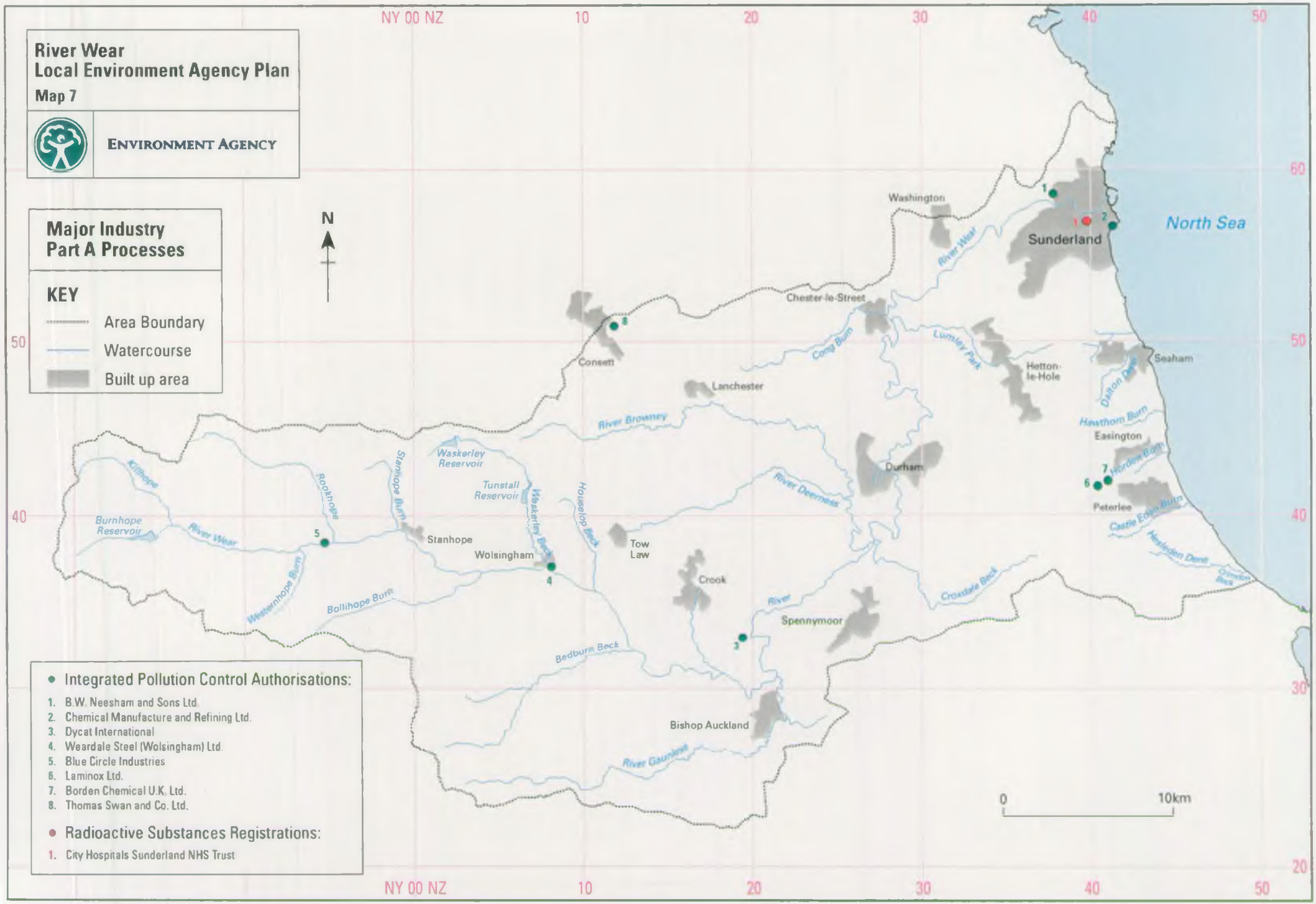
The major industrial sites (see Map 7) in the Wear area which are authorised by the Agency are:

- Blue Circle;
- Borden Chemicals;
- B W Neesham & Sons Limited;
- Chemical Manufacture and Refining Limited;
- Dycat International;
- Laminox Limited;
- Weardale Steel.

There are also the use of radioactive substances in hospitals and research establishments for non-destructive testing and safe level detection.

The needs of industry in the rural setting are met by the existing towns and the traditional countryside activities can be developed by farm diversification and re-use of existing buildings to create new rural businesses.

This section relates to Issues 1 and 13.


River Wear
Local Environment Agency Plan
Map 7
ENVIRONMENT AGENCY
Major Industry
Part A Processes
KEY
Area Boundary
Watercourse
Built up area
N
NY 00 NZ
10
20
30
40
50
60
North Sea
Washington
Sunderland
River Wear
Chester-le-Street
Consett
Cong Burn
Lumley Park
Hetton-le-Hole
Seaham
Dalton Dene
Hawthorn Burn
Easington
Hardeen Burn
Peterlee
Castle Edge Burn
Hesledon Dene
Chowdon Beck
Lanchester
River Browney
Waskerley Reservoir
Tunstall Reservoir
Hisgarley Beck
Houselop Beck
Durham
River Deerness
Killhope
Burnhope Reservoir
Rookhope
Stanhope Burn
Stanhope
Wolsingham
Tow Law
Crook
Westernhope Burn
Bollihope Burn
Spennymoor
Croxdale Beck
Bedburn Beck
Bishop Auckland
River Gaunless
0
10km
Integrated Pollution Control Authorisations:
1. B.W. Needham and Sons Ltd.
2. Chemical Manufacture and Refining Ltd.
3. Dycat International
4. Weardale Steel (Wolsingham) Ltd.
5. Blue Circle Industries
6. Laminox Ltd.
7. Borden Chemical U.K. Ltd.
8. Thomas Swan and Co. Ltd.
Radioactive Substances Registrations:
1. City Hospitals Sunderland NHS Trust

5.4 Contaminated Land

General

Contaminated land arises largely as a result of past industrial processes which have left behind a legacy of many substances including: oils and tars; 'heavy metals'; organic compounds; soluble salts. Such land is mostly situated in urban areas, but the widespread mining of minerals and metals has resulted in many rural areas also being affected. Not all contaminated land is the result of historical pollution and may be the result of present day industrial processes.

The management of contaminated land is a twofold process ie:

- remedial works for land already contaminated;
- the implementation of correct management and standards which will minimise future contamination.

At present the main controls regarding the identification and remediation of contaminated land are through the planning process and the building control system. Where pollution is occurring the Agency has powers under the Water Resources Act 1991 to require the polluter to take remedial action.

The Environment Act 1995 contains the framework for a new contaminated land regime. For the first time in UK law there will be a specific definition of contaminated land and a specific procedure for securing remediation. However, the contaminated land provisions of the Act will not come into force until regulations have been made and official guidance has been published. The guidance will contain an explanation of a number of key terms contained within the Act and guidance regarding the identification of contaminated land, its remediation, and apportioning liability and for information appeals procedure.

The new regime will be based on the 'suitable for use' approach. It will take into account the actual or intended use of the site and will apply where it poses an unacceptable risk to health or the environment. It is the intention that, wherever possible, land contamination will be dealt with on a voluntary basis, or in conjunction with new development, rather than by imposing remediation notices. The implementation of the new regime will mostly be the responsibility of the local authorities but the Agency will be the 'lead authority' for sites which represent a particularly serious threat to the environment, including certain closed landfills which will be designated as 'special sites. This definition of 'special sites' will be given in the guidance. The Agency will develop our role as a consultee with the local authorities on technical details and where there is local expertise.

Local Perspective

Historically industrial development was mainly located in the east of the Wear LEAP area on the Durham coalfield (see Section 5.3 and 5.5). Contamination of land is therefore more likely to occur in this area. The precise nature and full extent of contaminated land is not known, since contamination is sometimes only realised when sites are redeveloped or when pollution actually occurs.

The guidance for contaminated land to accompany the Environment Act 1995 had not been issued at the time of going to press, so few details are available on how such sites will be identified and remedial works undertaken.

There are several sites in the Wear area which are currently adversely affecting water courses in the area. We have highlighted these in Issues 8 and 16. Under the Environment Act 1995 these sites may eventually be defined as contaminated.

This section is related is Issues 7, 8 and 16.

5.5 Mineral Extraction and Mining

General

Mining and mineral extraction activities have an impact upon the environment, both in terms of quality and quantity of ground and surface water by disturbance of aquifers, interception of watercourses, pumped discharges and changes to run-off.

Extraction may result in damage to areas of high conservation value, however there is considerable scope in the restoration phase of some sites for the creation of valuable wildlife habitats and for recreational use.

The Agency is a statutory consultee in the planning process under the Town and Country Planning Act 1990 (see Section 5.1 and Issue 1) and also controls discharges from working mines and quarries under the Water Resources Act 1991. Discharges from mines abandoned before the year 2000 are specifically exempted from this control.

Minewaters discharging from coal mines can cause significant pollution problems, eg may be acidic and produce deposits such as iron hydroxide and zinc. Gravity-fed discharges can occur form abandoned mines, those that have closed more recently tend to have the water pumped to the surface which maintains levels and minimises contamination. If the pumping is stopped the water will either flow into a neighbouring mine system or overflow at some point on the surface.

The Agency does not currently control solid wastes arising from mine and quarrying operations. These wastes are subject, however, to the requirements of the Mines and Quarries Act 1954 and the Mines and Quarries (Tips) Act 1969.

Offshore mineral developments are controlled by the Department of Trade and Industry in consultation with other government departments.

Local Perspective

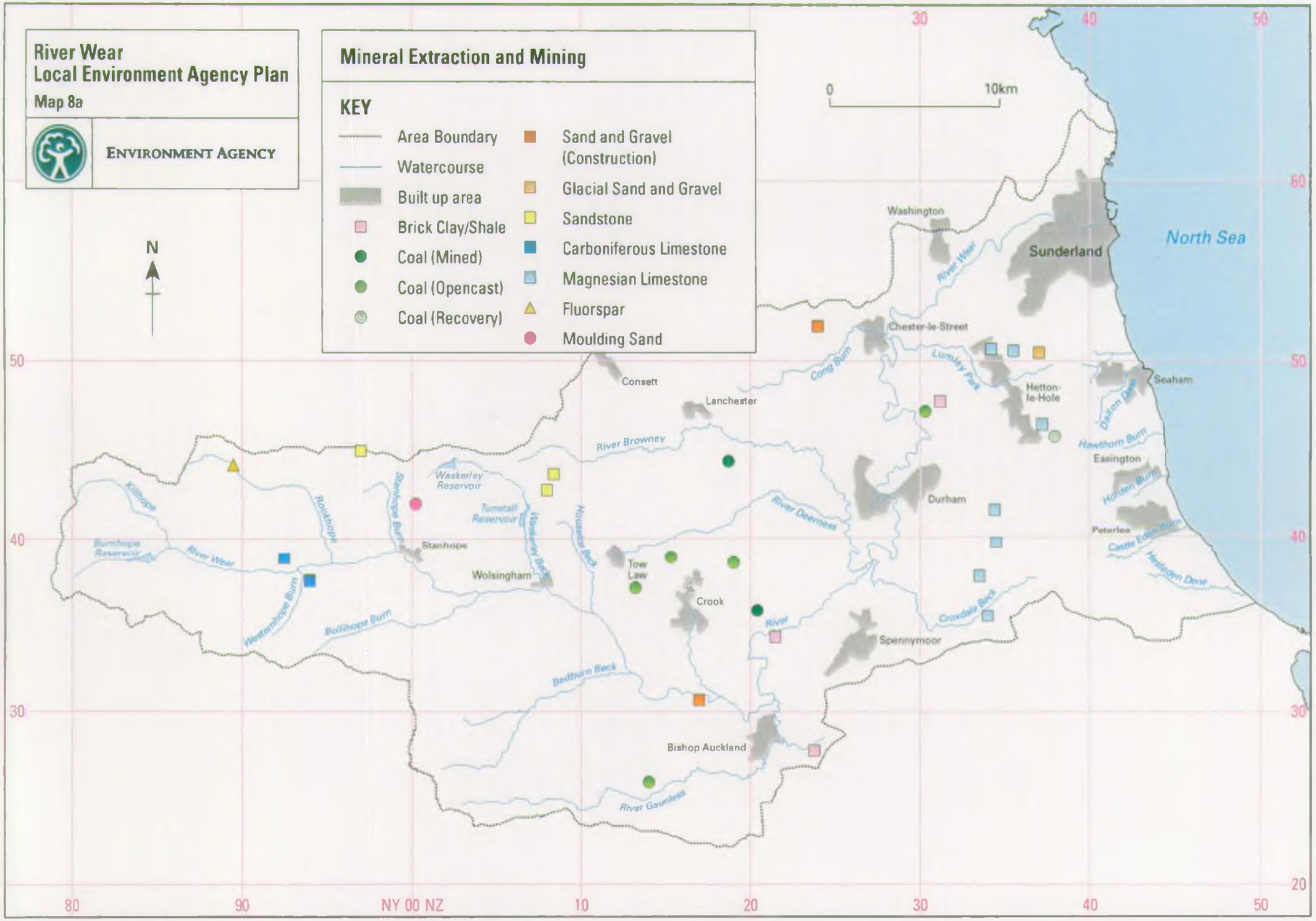
Mining and quarrying have been an integral part of the working environment of the Wear area. The main minerals currently being worked are coal, sand and gravel, sandstone, limestone, dolomite, igneous rock, brickclay and vein minerals such as fluorspar and barytes. Lead mining has ceased and coal working is restricted to opencast operations. There has been no requirement for ganister (a type of sandstone) quarrying since the closure of the Consett steelworks. Map 8a shows locations of mines within the Wear area.

At present there are only two active limestone quarries in upper Weardale at Heights Quarry and the APCM Quarry at Eastgate. High quality sand for moulding purposes in the steel industry is quarried to the north of Stanhope. Permian sand is quarried, mainly for the building trade, in the Sherburn area to the east of Durham. Further sand and gravel quarries are active in the Beechburn and Witton Park locality. Land at West Auckland adjacent to Hummer Beck, has planning permission for sand and gravel extraction.

Mining for fluorspar/barytes from abandoned lead/zinc mines occurs in upper Weardale and the Rookhope valleys. Discharges from active and abandoned mines causes elevated dissolved metal concentrations in the downstream watercourses. There are many abandoned mine discharges entering water courses throughout the Wear area. Some of these result in ochre staining and pollution of the receiving water course. It should be stressed that these discharges are not related to the pumping to dewater deep coal mines discussed below. The location and impact of all these discharges from abandoned mines has not been fully assessed.

In general limestone and sandstone quarries have little impact on the river system. Run-off is usually reduced with rainfall being taken up by the exposed rock on the quarry floor through fissures, etc. Sand and gravel quarrying is generally located within the floodplain of the rivers and streams. Operations during the 1950-1960s within and adjacent to the River Wear had a devastating effect on the river regime over a 15 mile stretch between Willington and Wolsingham. Severe erosions of bed and bank were experienced along with the associated downstream deposition of gravels forming shoal islands. More effective control in conjunction with the Mineral Planning Authority has ensured that extraction is now restricted to at least 5 metres away from the river bank.

Opencast coal mining is relatively recent and located on the exposed coalfield, with the first sites being worked in the late 1950s around Crook. Shallow seams have been the target for opencast operations which are generally located on poor quality land, badly scarred/broken with pitfalls. Prior to opencast operations most of the rainfall entered the old workings with very little run-off to the surface streams.


River Wear
Local Environment Agency Plan
Map 8a
Environment Agency
Mineral Extraction and Mining
KEY
Area Boundary
Watercourse
Built up area
Brick Clay/Shale
Coal (Mined)
Coal (Opencast)
Coal (Recovery)
Sand and Gravel (Construction)
Glacial Sand and Gravel
Sandstone
Carboniferous Limestone
Magnesian Limestone
Fluorspar
Moulding Sand
N
0
10km
North Sea
Washington
Sunderland
River Wear
Chester-le-Street
Cong Burn
Lumley Park
Seaham
Dalton Dene
Hetton-le-Hole
Hawthorn Burn
Easington
Holden Burn
Peterlee
Castle Eden Burn
Hesledon Dene
Consett
Lanchester
River Browney
Waskerley Reservoir
Stanhope Burn
Killhope
Rookhope
Burnhope Reservoir
Stanhope
Wolsingham
Tunstall Reservoir
Hisehope Beck
Horsleyside Beck
River Deerness
Durham
Tow Law
Crook
River
Croxdale Beck
Spennymoor
Westernhope Burn
Bollihope Burn
Bedburn Beck
Bishop Auckland
River Gaunless
30
40
50
60
20
NY 00 NZ
80
90
10
20
30
40
50

On completion the working sites are restored and the ground compacted resulting in almost 100% run-off. After about 2 years grasses become established, some tree and hedgerow planting is carried out and the run-off takes on a more normal pattern. In the upper areas of the Rivers Deerness and Browney there are significant areas of restored opencast sites. The Gaunless Valley and parts of the Wear Valley itself have been affected to a lesser extent.

Deep Coal Mine - Mine water Pumps

Deep mining for coal in the Wear area has ceased. Prior to the closure of coastal collieries, British Coal operated a number of inland pumping stations (former collieries) to intercept and prevent minewater flowing through the workings to the coast. The Coal Authority is now responsible for the operation of the nine remaining pumping stations (see Map 8b).

The Agency is concerned that the cessation of pumping and flooding of coal workings of the Durham coalfield would result in polluting discharges to the River Wear and its tributaries. To investigate this potential problem, prior to the closure of the coastal collieries, the former National Rivers Authority commenced investigations including the construction of several monitoring boreholes. The use of computer models predicted that large discharges of polluted minewater would flow into the River Wear within months of the pumps stopping. However, predicting the likely future pattern of minewater flows is extremely difficult due to the complexity of the underground flow routes through the vast areas of old workings. The Agency is continuing investigations in order to improve the accuracy of predictions.

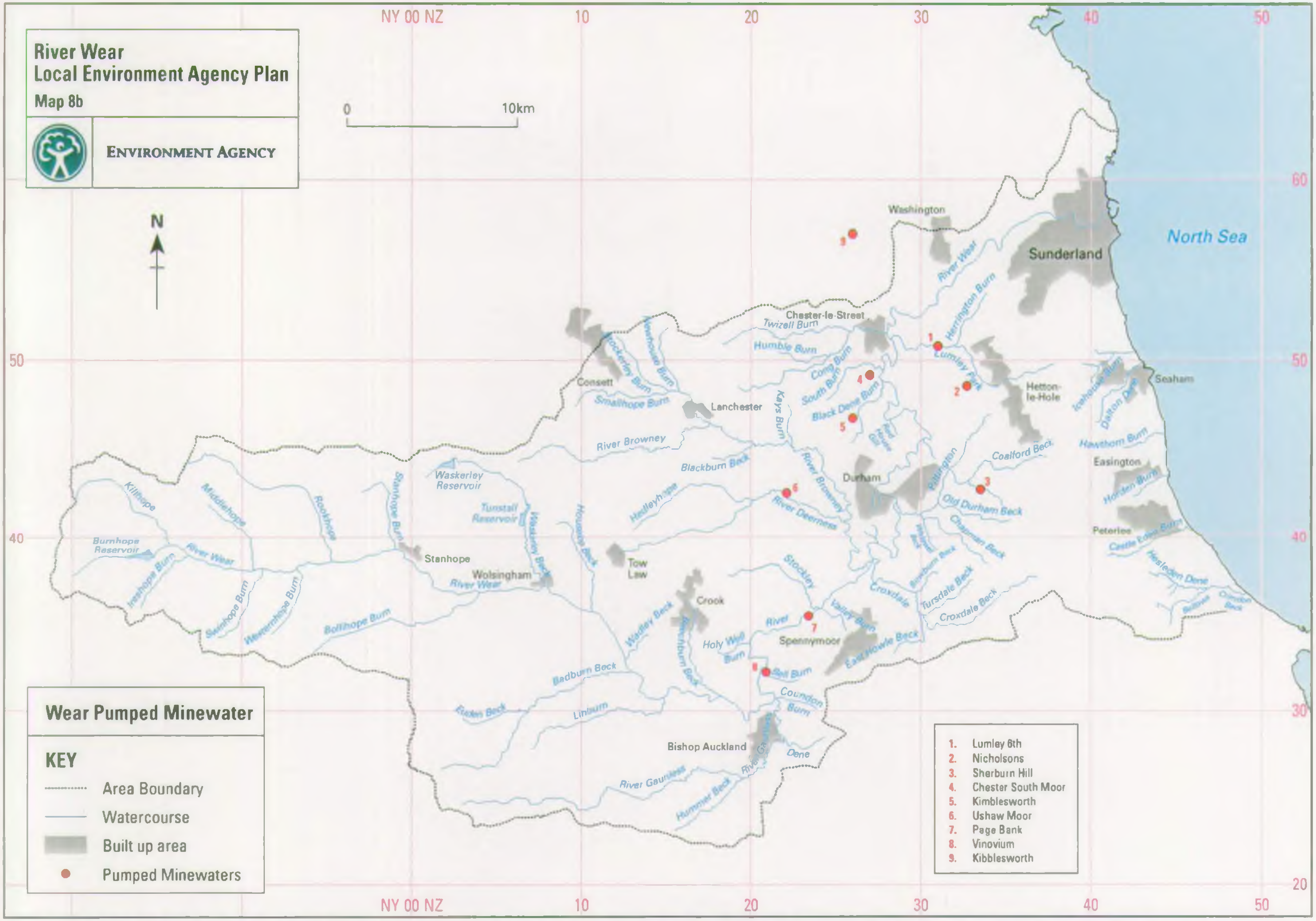
The Coal Authority continues to operate the pumping stations whilst further investigations progress. The cost of this pumping is around £1 million per year. Ministers have given assurances that the Coal Authority will continue the minewater pumping in the Durham coalfield.

The "Code of Practice Relating to the Abandonment of Mines and Reductions in Minewater Pumping" has now been ratified. In the absence of statutory provisions to deal with discharges from abandoned mines the Agency will continue liaison with these parties to establish an operating framework to prevent water pollution.

Gravel Extractions

Any extension or improvement of the road infrastructure may lead to an increased demand for gravel which may come from local sources. In the past applications for gravel extraction near rivers have been refused planning permission. Any future shortfall for mineral supplies may result in new applications. Care must be taken to ensure that there are no adverse affects to the water environment.

This section relates to Issues 1 and 7.


River Wear
Local Environment Agency Plan
Map 8b
Environment Agency
Wear Pumped Minewater
KEY
Area Boundary
Watercourse
Built up area
Pumped Minewaters
1. Lumley 6th
2. Nicholsons
3. Sherburn Hill
4. Chester South Moor
5. Kimblesworth
6. Ushaw Moor
7. Page Bank
8. Vinovium
9. Kibblesworth
0
10km
N
NY 00 NZ
10
20
30
40
50
60
North Sea
Sunderland
Washington
Chester-le-Street
Seaham
Hetton-le-Hole
Easington
Peterlee
Durham
Consett
Lanchester
Stanhope
Wolsingham
Tow Law
Crook
Spennymoor
Bishop Auckland
River Wear
Herrington Burn
Lumley Park
Twizell Burn
Humble Burn
Cong Burn
South Burn
Black Dene Burn
Kays Burn
River Browney
Smallhope Burn
Blackburn Beck
River Deerness
Hedleyhope
Coalford Beck
Old Durham Beck
Hawthorn Burn
Horden Burn
Castle Eden Burn
Hesleden Dene
Killhope
Middlehope
Rookhope
Stanhope Burn
Waskerley Reservoir
Tunstall Reservoir
Waskerley Beck
Houselop Beck
Burnhope Reservoir
Ireshope Burn
Swinhope Burn
Westernhope Burn
Bollihope Burn
Stockley
Croxdale
Valley Burn
Tursdale Beck
Croxdale Beck
East Howle Beck
Chapman Beck
Holy Well Burn
Bell Burn
Coundon Burn
Wadley Beck
Beechburn Beck
Badburn Beck
Linburn
Euden Beck
River Gaunless
Hummer Beck
Dene
Pittington
Dalton Dene

5.6 Surface and Groundwater Abstraction

General

One of the Agency's key roles in managing water resources is the licensing of abstractions from surface and groundwater for public/private water supply, industrial and agricultural use. Our objective is to manage water resources to achieve the right balance between the needs of the environment and those of the abstractors.

Surface Water Abstraction

The abstraction of water is controlled, with certain exceptions, by the Water Resources Act 1991, which sets out a system of Abstraction Licensing. The Act sets out various considerations:

- whether the requirements of the applicant are reasonable;
- the impact on other water users;
- the impact on river flows and the environment.

Groundwater Abstraction

Groundwater abstractions are also licensed under the Water Resources Act as mentioned above. Groundwater, in general, is of high quality, both microbiologically and chemically, and usually requires little treatment. However, there are many activities that can cause pollution through underground seepage and once polluted it is extremely difficult and costly to alleviate. A document entitled '*Policy and Practice for the Protection of Groundwater*' has been published and is being implemented by the Agency within the Region.

Groundwater protection zones will consist of inner, outer and entire catchment zones and will be based on the travel time of a pollutant to an abstraction source. These zones will be published and most of the controls will be achieved through planning consultations. The above document contains guidelines indicating the Agency's likely response to potentially polluting activities within the various protection zones. These activities include:

- waste disposal to land;
- redevelopment of contaminated land;
- application of sludge/slurries to land;
- discharge to underground strata.

Protection zones will be designated for the more vulnerable sources, such as those used for public water supply.

In addition to the statutory exemptions in the Act, the area covered by the former Northumbrian Water Authority has special provisions included in the Northumbrian Water Authority Act 1981 which states:

"*Abstractions from underground strata and springs which do not exceed 1,000,000 gallons a year, with a daily rate not exceeding 50,000 gallons, are exempt from licensing control.*"

Local Perspective

Map 9 shows the water supply infrastructure within the Wear area.

Surface Water Abstraction

One of the prime uses of water resources in the Wear area is to support abstraction for public water supply. Abstractions are controlled by Agency licences which stipulate the total daily and annual quantities authorised for abstraction. Conditions are specified which ensure a minimum flow in the river downstream of an abstraction to protect the water quality, river ecology and the requirements of other users. Abstraction licences are issued under the Water Resources Act 1991.

There are 47 licensed surface water abstractions in the Wear area, authorising abstraction of 62,501 thousand cubic metres per annum (TCMA). Public water supply licences account for over 87% of the authorised abstraction, agriculture 7% and industry 6%.

Northumbrian Water Ltd (NWL) is the public water supply undertaker in the Wear area. The NWL abstractions are from reservoirs in the headwaters of the River Wear, ie Tunstall, Burnhope and Waskerley, in addition to several small springs. NWL also abstracts water from the lower River Wear at Lumley. There is a Minimum Maintain Flow (MMF) of 2 cumecs set at the Agency's river gauging station at Chester le Street, just downstream of the NWL abstraction at Lumley (see Section 6.1).

Kielder releases were made to support the flow in the River Wear in 1984, from 1989 to 1992 inclusive and from 1994 to 1996 inclusive. The amount of water transferred in each of these years is shown in Table 2 below:

Total Kielder transfers released from Frosterley 1984-96 (TCM)		
Year	**Volume**	**Months**
1984	503	July, Aug
1989	7910	June - Dec (incl)
1990	5270	May - Oct (incl)
1991	1052	Aug, Sept
1992	1195	June - Aug (incl)
1993	0	
1994	2444	July - Sept (incl)
1995	4010	July - Oct (Mid)
1996	1000	July - Sept (Mid)

Table 2 Details of transfers to the River Wear from the Kielder Tunnel

The Kielder Scheme

Following a period of unprecedented growth in water demand in the North East during the 1960s and early 1970s, the Kielder Scheme was developed to provide a strategic water resource system in support of abstractions in the Rivers Tyne, Wear and Tees. The Scheme comprises two major elements :

1. Kielder Water in the River Tyne catchment, holding 200 million cubic metres of water in storage, with a surface area of over 10km^2 and held back by a 59m high earth embankment. Releases from Kielder Water are made to regulate the flow in the Rivers North Tyne and Tyne with the primary purpose of supporting abstractions.

2. The Transfer Works, drawing water from the River Tyne at a pumping station at Riding Mill and pumping it by means of a steel pipeline to a header pond at Airy Holme and from there by a 3 metre gravity tunnel to outlets into Mosswood treatment works and the Rivers Derwent, Wear and Tees. The River Wear discharge point is at Frosterley.

The Scheme was designed to meet regional demands in drought years until early in the twenty-first century. Although actual domestic demands are close to those forecast at the time of the Scheme's proposal, anticipated industrial demands have not materialised and in 1991 stood at 661 thousand cubic metres per day (TCMD), 56% below the forecast. Despite this the Scheme provides significant support for abstractions on: the River Tyne; the River Wear in 1984 and each of the drought years from 1989 to 1996; the River Tees in 1989 and 1990. Releases from Kielder Water are also used for hydro-electric power generation.

With the availability of support for abstractions from Kielder Water, no water resource problems in the Wear area are anticipated and there remains the possibility of extending the use of the Kielder Scheme to meet demands in Yorkshire and further south. Whilst water stored in Kielder is under-utilised for public water supply, regulation releases can be put to alternative uses for the benefit of the aquatic environment.

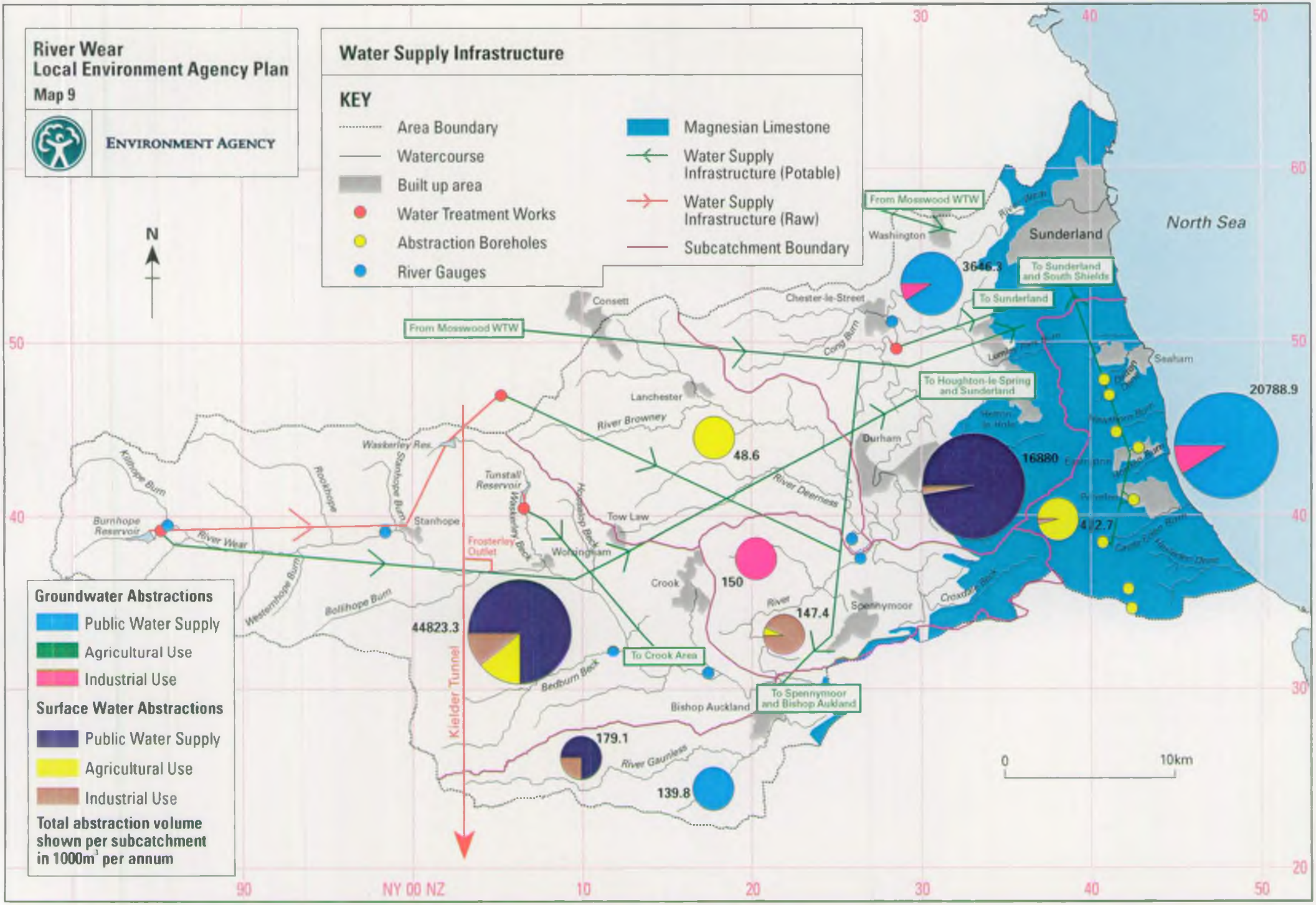
The present use of the River Wear for water supply is jeopardised by the possibility of the cessation of minewater pumping. This could have a dramatic effect on the river water quality downstream of Bishop Auckland, and could effect the quality of water available for abstraction at Lumley (see Issue 7).

Groundwater Abstraction

There are 27 licensed groundwater abstractions in the Wear area shown in Table 3 below:

Use	**Volume (TCMA)**
Public water supply (NWL & Hartlepool Water Co)	22,621
Industrial abstraction	2,070
Agricultural uses	34

Table 3 Details of Groundwater Abstractions


River Wear
Local Environment Agency Plan
Map 9
ENVIRONMENT AGENCY
Water Supply Infrastructure
KEY
Area Boundary
Watercourse
Built up area
Water Treatment Works
Abstraction Boreholes
River Gauges
Magnesian Limestone
Water Supply Infrastructure (Potable)
Water Supply Infrastructure (Raw)
Subcatchment Boundary
N
North Sea
Sunderland
Washington
Chester-le-Street
Consett
Lanchester
Durham
Seaham
Stanhope
Crook
Spennymoor
Bishop Auckland
From Mosswood WTW
To Sunderland and South Shields
To Sunderland
To Houghton-le Spring and Sunderland
To Crook Area
To Spennymoor and Bishop Aukland
Kielder Tunnel
Frosterley Outlet
Burnhope Reservoir
Waskerley Res.
Tunstall Reservoir
River Wear
River Browney
River Deerness
Tow Law
Bedburn Beck
River Gaunless
3646.3
48.6
16880
20788.9
412.7
150
147.4
44823.3
179.1
139.8
Groundwater Abstractions
Public Water Supply
Agricultural Use
Industrial Use
Surface Water Abstractions
Public Water Supply
Agricultural Use
Industrial Use
Total abstraction volume shown per subcatchment in 1000m³ per annum
0
10km
NY 00 NZ

5.7 Effluent Disposal

General

The disposal of domestic, agricultural and industrial effluents to water can adversely affect river and coastal water quality. Potentially, this may have a significant effect on other uses, particularly water abstraction, recreation and ecology.

One of the Agency's main tasks is to control the impact of effluent discharges on river water quality. This is achieved by issuing conditional consents to discharge under the Water Resources Act 1991. Such consents contain conditions limiting volume and quality of discharges at levels which ensure that the quality of the river below the point of discharge is suitable for the expected uses. Conditions are determined for each discharge and take account of the diluting effect of the river.

The Agency also controls discharges to water from major industrial sites under its IPC duties (see Section 6.3).

In addition to the disposal of effluents to water, the disposal of certain industrial effluents by surface application to farm land is also practised. This may be classed as an exempt activity under Schedule 3 of the Waste Management Licensing Regulations 1994 providing that:

- no more than 250 tonnes of waste per hectare is spread during any 12 months;
- the spreading results in benefits to agriculture or ecological improvement;
- detailed particulars of the spreading are furnished in advance to the Agency.

Local Perspective

Fresh Water

Within the Wear area there are approximately 142 Sewage Treatment Works (STW). Northumbrian Water Ltd (NWL) operate 82 of these works, of which 50 serve populations in excess of 250. The remaining STWs serve small private developments and are operated by the owners. A number of STWs impact on the receiving watercourses, including Sedgeletch STW (Herrington Burn), Crookhall STW (Stockerley Burn) and Hustledown STW (Twizell Bum). The major consented discharged are shown in Map 10).

Currently, there are a number of untreated sewage discharges from the Wearside conurbation into the estuary, the most significant being at Queen Alexandra Bridge. Consent to remove the raw sewage from the estuary and discharge it to the North Sea via the existing Hendon Sewer Outfall, has been granted for a limited period.

There are only two significant discharges of industrial effluent to freshwater in the Wear area: Blue Circle Cement in the Upper Wear; Philips Components in the lower Wear. In addition, there are discharges from water treatment works, opencast coal sites, quarries and disused collieries.

There are an estimated 450 combined sewage overflows (CSOs) and 70 sewage pumping stations with overflows designed to operate only in the event of a prolonged electrical or mechanical breakdown. Discharges occur intermittently and a number cause chronic pollution problems. The areas of most concern are: the River Gaunless (including the Coundon Burn) and the Beechburn Beck, both in the middle reaches of the River Wear; Dalton Burn and Seaton Burn on the Coast.

Coastal Waters

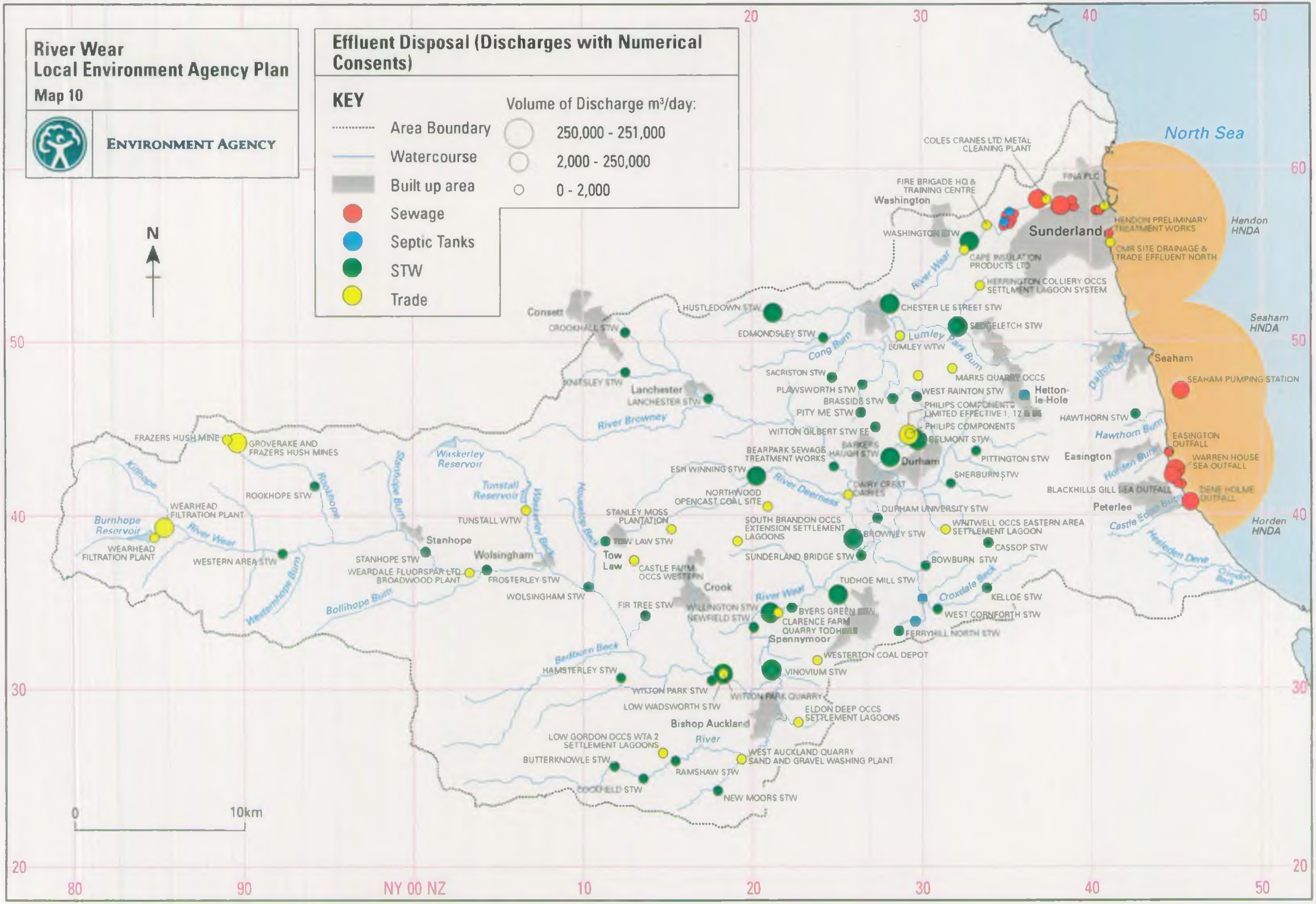
Discharges to the Wear estuary can affect adjacent coastal waters and some storm sewage discharges to the sea still exist. Major engineering schemes by Northumbrian Water Limited (NWL) to address such discharges have now been undertaken at Whitburn and Roker.

There is a trade effluent discharge from Chemical Manufacture and Refining Limited solvent recovery plant at Hendon and close to the Hendon sewage outfall, which has the largest discharge (in volume) in the area. Between Hendon and the Crimdon Beck there are a number of sewage discharges. Five of these are in the Seaham area and are the subject of rationalisation and improvement schemes. Of the remainder, the most significant is the Horden outfall, serving Peterlee, which receives trade effluents from the food industry.

The EC Urban Waste Water Treatment Directive, due to be implemented over the period to the year 2005, will require improvement to a number of STWs in the Wear area.

Asset Management Plans

Many water quality problems are due to the effects of discharges to the watercourse from NWL sewage treatment works or combined sewerage overflows. Any work by NWL for the improvement and maintenance of the water supply, sewage treatment works and sewerage systems must be planned for in their Asset Management Plan (AMP). These plans are drawn up through consultations with the


River Wear
Local Environment Agency Plan
Map 10
Environment Agency
Effluent Disposal (Discharges with Numerical Consents)
KEY
Area Boundary
Watercourse
Built up area
Sewage
Septic Tanks
STW
Trade
Volume of Discharge m³/day:
250,000 - 251,000
2,000 - 250,000
0 - 2,000
N
0
10km
North Sea
Sunderland
Washington
Consett
Lanchester
Durham
Seaham
Hetton le Hole
Easington
Peterlee
Stanhope
Wolsingham
Tow Law
Crook
Spennymoor
Bishop Auckland
Hendon HNDA
Seaham HNDA
Horden HNDA
COLES CRANES LTD METAL CLEANING PLANT
FIRE BRIGADE HQ & TRAINING CENTRE
TINA PLC
WASHINGTON STW
HENDON PRELIMINARY TREATMENT WORKS
CMR SITE DRAINAGE & TRADE EFFLUENT NORTH
CAPE INSULATION PRODUCTS LTD
HERRINGTON COLLIERY OCCS SETTLEMENT LAGOON SYSTEM
HUSTLEDOWN STW
CHESTER LE STREET STW
SEDGELETCH STW
CROOKHALL STW
EDMONDSLEY STW
LUMLEY WTW
SACRISTON STW
MARKS QUARRY OCCS
PLAWSWORTH STW
WEST RAINTON STW
BRASSIDE STW
PHILIPS COMPONENTS LIMITED EFFECTIVE 1, 12
PITY ME STW
SEAHAM PUMPING STATION
HAWTHORN STW
WITTON GILBERT STW
PHILIPS COMPONENTS
BELMONT STW
EASINGTON OUTFALL
BEARPARK SEWAGE TREATMENT WORKS
BARKERS HAUGH STW
PITTINGTON STW
WARREN HOUSE SEA OUTFALL
FRAZERS HUSH MINE
GROVERAKE AND FRAZERS HUSH MINES
ESH WINNING STW
SHERBURN STW
DAIRY CREST DAIRIES
BLACKHILLS GILL SEA OUTFALL
DENE HOLME OUTFALL
ROOKHOPE STW
NORTHWOOD OPENCAST COAL SITE
DURHAM UNIVERSITY STW
WEARHEAD FILTRATION PLANT
STANLEY MOSS PLANTATION
SOUTH BRANDON OCCS EXTENSION SETTLEMENT LAGOONS
WHITWELL OCCS EASTERN AREA SETTLEMENT LAGOON
TUNSTALL WTW
BROWNEY STW
TOW LAW STW
CASSOP STW
WESTERN AREA STW
STANHOPE STW
CASTLE FARM OCCS WESTERN
SUNDERLAND BRIDGE STW
BOWBURN STW
WEARDALE FLUORSPAR LTD BROADWOOD PLANT
FROSTERLEY STW
TUDHOE MILL STW
WOLSINGHAM STW
KELLOE STW
FIR TREE STW
WILLINGTON STW
NEWFIELD STW
BYERS GREEN STW
CLARENCE FARM QUARRY TODHILLS
WEST CORNFORTH STW
FERRYHILL NORTH STW
WESTERTON COAL DEPOT
HAMSTERLEY STW
VINOVIUM STW
WITTON PARK STW
WITTON PARK QUARRY
LOW WADSWORTH STW
ELDON DEEP OCCS SETTLEMENT LAGOONS
LOW GORDON OCCS WTA 2 SETTLEMENT LAGOONS
BUTTERKNOWLE STW
WEST AUCKLAND QUARRY SAND AND GRAVEL WASHING PLANT
RAMSHAW STW
COCKFIELD STW
NEW MOORS STW
River Wear
River Browney
River Deerness
Cong Burn
Lumley Park Burn
Dalton Burn
Hawthorn Burn
Horden Burn
Castle Eden Burn
Hesleden Dene
Croxdale Beck
Bedburn Beck
Killhope
Rookhope
Stanhope Burn
Waskerley Beck
Westernhope Burn
Bollihope Burn
Burnhope Reservoir
Waskerley Reservoir
Tunstall Reservoir
River
80
90
NY 00 NZ
10
20
30
40
50

Agency and other bodies and cover a five year period. The plans have to be agreed by the Department of the Environment and the Office of Water Services (OFWAT). Any expenditure in the years 1995 to 2000 for improvements to sewage works or infrastructure must already be planned for in the current AMP (referred to as AMP2). Any future investment must be planned for in the next Asset Management Plan (AMP3), which is currently being negotiated.

The cessation of mine water pumping may cause the water quality in a river stretch to deteriorate by decreasing water quantity in the receiving watercourse (see Issue 7).

Various industrial wastes and sewage sludge have been dumped at sea under the regulation of MAFF. The dumping of industrial wastes has now ceased but sewage sludge dumping continues. This practice must be phased out and an alternative means of sludge disposal found by the end of 1998.

Significant discharges of sewage will require treatment in order to comply with the requirements of the EC Urban Waste Water Treatment Directive (see Issues 4 and 5). Discharges from sewage works with population equivalents (pe) of greater than 10,000 generally require that secondary treatment must be provided by the end of the year 2000. Those works serving between 10,000 and 20,000 pe must receive such treatment by the end of 2005. Smaller discharges must receive "appropriate treatment" by the end of 2005. "Appropriate treatment" will depend on the needs of the receiving water.

The Directive also provides for designation of areas as "sensitive", in which case more stringent treatment (including nutrient removal) of discharges from more than 10,000 pe will be required. No "sensitive areas" have been identified within the Wear area.

Conversely, discharges of between 10,000 and 150,000 pe (and, exceptionally, with the agreement of the European Commission, those greater than 150,000 pe) to "high natural dispersion areas" (HNDAs) may require only primary treatment. In this case, the discharger must demonstrate to the Agency by "comprehensive studies" that the discharge has no adverse effect on the environment. These discharges must be reviewed every four years. A number of HNDAs have been identified on this stretch of coast and potentially affect the outfalls at Hendon, Seaham and Horden.

Disposal of waste, which could arise from offshore oil spills, requires special consideration in order to avoid polluting the coast and the Magnesian Limestone, which outcrops along the coast from Sunderland to Hartlepool. Identification of possible disposal sites should be made prior to any incidents occurring. The Agency should be consulted at an early stage to ensure protection of potable groundwater supplies.

Issues 4, 5, 7 nand 12 are related to this Section.

5.8 Waste Management

General

All sectors of society produce waste and there are a variety of facilities which perform the very necessary function of processing, recycling and disposing of it. These waste management activities can have a detrimental impact on the environment unless they are suitably regulated. Some of the most significant potential problems include:

- pollution of surface or groundwater;
- uncontrolled escape of landfill gas;
- nuisance caused by litter, vermin, odour, dust, noise or vibration;
- release of poisonous, harmful or polluting materials into the environment;
- waste materials proving harmful to health;
- contamination of land on which waste management activities have taken place.

To promote a more sustainable approach to waste management, the Government published a white paper '*Making Waste Work: A Strategy for Sustainable Waste Management in England and Wales*'. To assist achieve its objectives the strategy ranks the waste management options into a hierarchy which gives a broad indication of their potential risk to the environment (with the least risk at the top).

- reduction
- re-use
- recovery (ie recycling, composting, or converting into energy)
- disposal

Targets have been set to recycle or compost 25% of household waste by 2000 and reduce the amount of controlled waste going to landfill from 70 % to 60% by 2005.

The Role of The Agency

The Agency's principal role in directly protecting the environment from waste is through the regulation of waste management facilities. Under the Waste Management Regulations 1994 a system of environmental safeguards and standards are set. The Agency issues conditional licences with specific conditions that seek to prevent pollution of the environment and harm to human health. These licensed facilities are monitored to ensure that standards are met.

The Agency has a strategic waste planning role to provide advice to the Secretary of State in the preparation of a national waste strategy. The Agency has also been charged with carrying out a national waste survey to provide a comprehensive assessment of waste produced and sites that deal with it. The information obtained will be used for both local and national planning purposes. The national strategy will help to progress the DOE's proposals on sustainable waste management and will influence the direction of the waste management industry in the future.

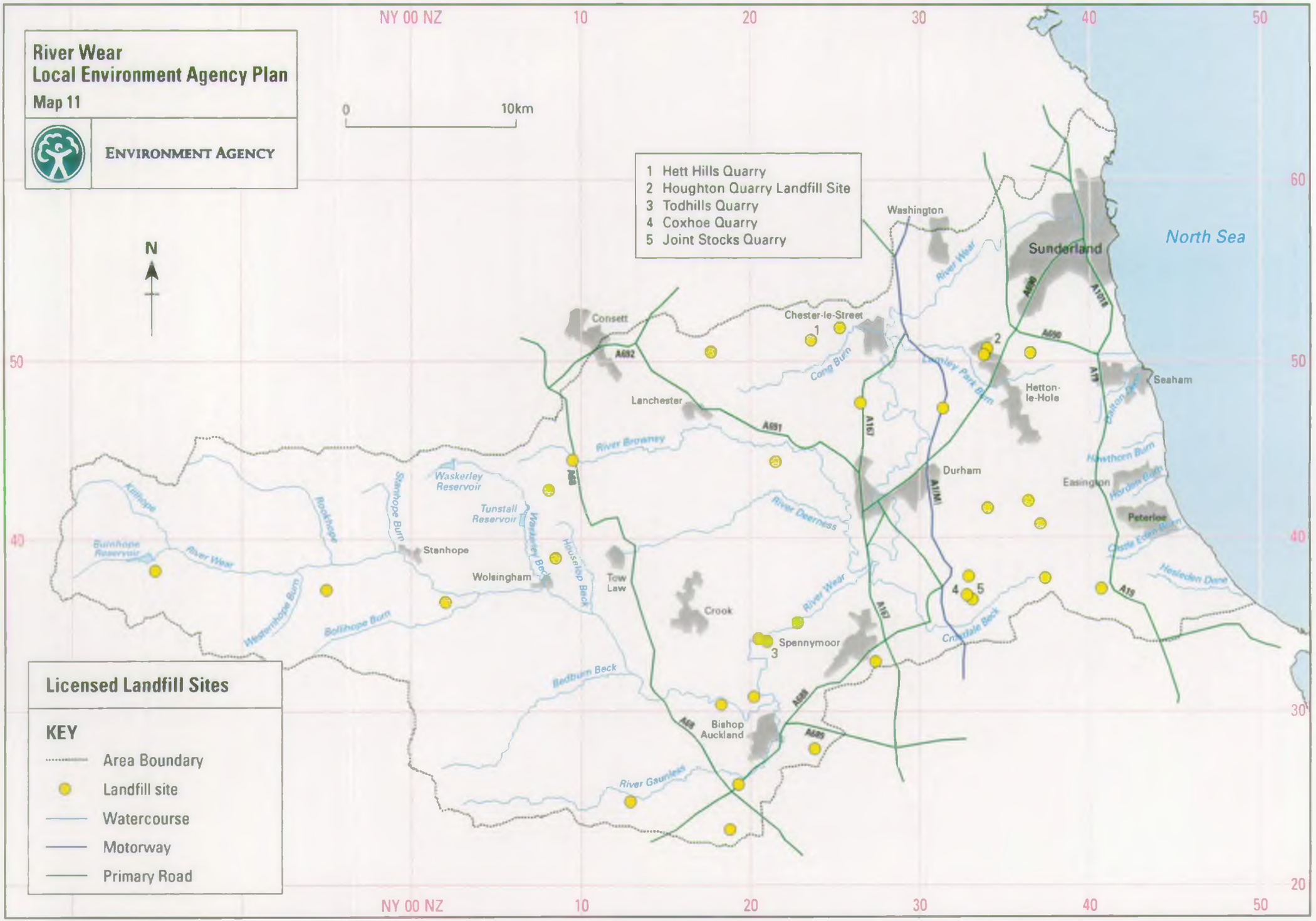
The Agency has a new duty to monitor producer responsibility schemes which require companies to recover value from specified waste streams. The first statutory scheme, introduced in March this year, covers packaging and packaging waste.

The main functions and activities of the Agency with regard to controlled waste are set out below:

- operation of enforcement procedures aimed at unauthorised activities;
- regulate and monitor the movement of special waste, including international movements;
- registration of waste carriers, brokers and licensing exemption and the promotion of the Duty of Care;
- regulation of Integrated Pollution Control processes which involve waste;
- responding to planning consultations where issues concerning waste may be a relevant factor;
- maintenance of a public register and the general provision of waste management information and advice;
- to have regard to the landscape and conservation impacts of waste management activities.

There are wastes which currently are not controlled by the Agency and include:

- decommissioned explosives;
- waste from mining and quarrying operations;
- agricultural waste.


River Wear
Local Environment Agency Plan
Map 11
Environment Agency
0
10km
N
1 Hett Hills Quarry
2 Houghton Quarry Landfill Site
3 Todhills Quarry
4 Coxhoe Quarry
5 Joint Stocks Quarry
NY 00 NZ
10
20
30
40
50
60
North Sea
Washington
Sunderland
Consett
Chester-le-Street
Lanchester
Seaham
Hetton-le-Hole
Durham
Easington
Peterlee
Stanhope
Wolsingham
Tow Law
Crook
Spennymoor
Bishop Auckland
River Wear
River Browney
River Deerness
Waskerley Reservoir
Tunstall Reservoir
Burnhope Reservoir
Cong Burn
Hawthorn Burn
Hesleden Dene
Bedburn Beck
River Gaunless
A1(M)
A19
A167
A68
A690
A691
A692
Licensed Landfill Sites
KEY
Area Boundary
Landfill site
Watercourse
Motorway
Primary Road

Local Perspective

In the Wear area there are 100 licensed waste management sites (see Map 13), 34 of which are landfill sites. Some of the largest and most widely used landfills are shown on Map 11, many are managed by Durham County Waste Management Ltd (DCWM). These sites take inert and biodegradable wastes and are engineered to minimise the risk of pollution of groundwater and the danger of landfill gas. Other smaller sites may take only inert wastes. There are several active gas extraction systems at the sites in order to control off site gas migration. DCWM is currently developing a plant to generate electricity from landfill gas at Coxhoe landfill. This would provide the environmental benefit of generating energy from waste and reducing the emission of greenhouse gases to the atmosphere. There is a new landfill site proposed at Marks Quarry, Houghton-le-Spring.

There are also many sites which are exempt from a waste management licence but must register as exempt. These range from sanitary discharges from trains to waste being used for land reclamation. There are approximately 220 sites registered in the Wear area including 16 where the waste is used for land reclamation or improvement and 45 that can store waste suitable for the purpose of specified construction work.

There are 22 licensed metal recycling sites (scrapyards) and motor vehicle dismantlers in the Wear area, most of these are located in Sunderland (see Map 22). Some of these sites have been licensed recently and through conditions in their licences are being steadily improved. 32 metal recyclers have registered as exempt from licensing.

The 15 civic amenity sites located throughout the Wear area enable householders to dispose of excess of bulky domestic wastes. These sites are being increasingly used, encouraged by the extension of their role for use as recycling centres. There is a good network of transfer stations in the Wear area which are licensed to accept a variety of wastes such as inert and construction wastes, commercial, industrial or household wastes. Chemical Manufacturers & Refining Limited at Sunderland is licensed to store solvent wastes which are then recovered. The only site licensed for treatment is the mobile timber shredder in Sunderland which shreds timber for use on footpaths, bridleways etc.

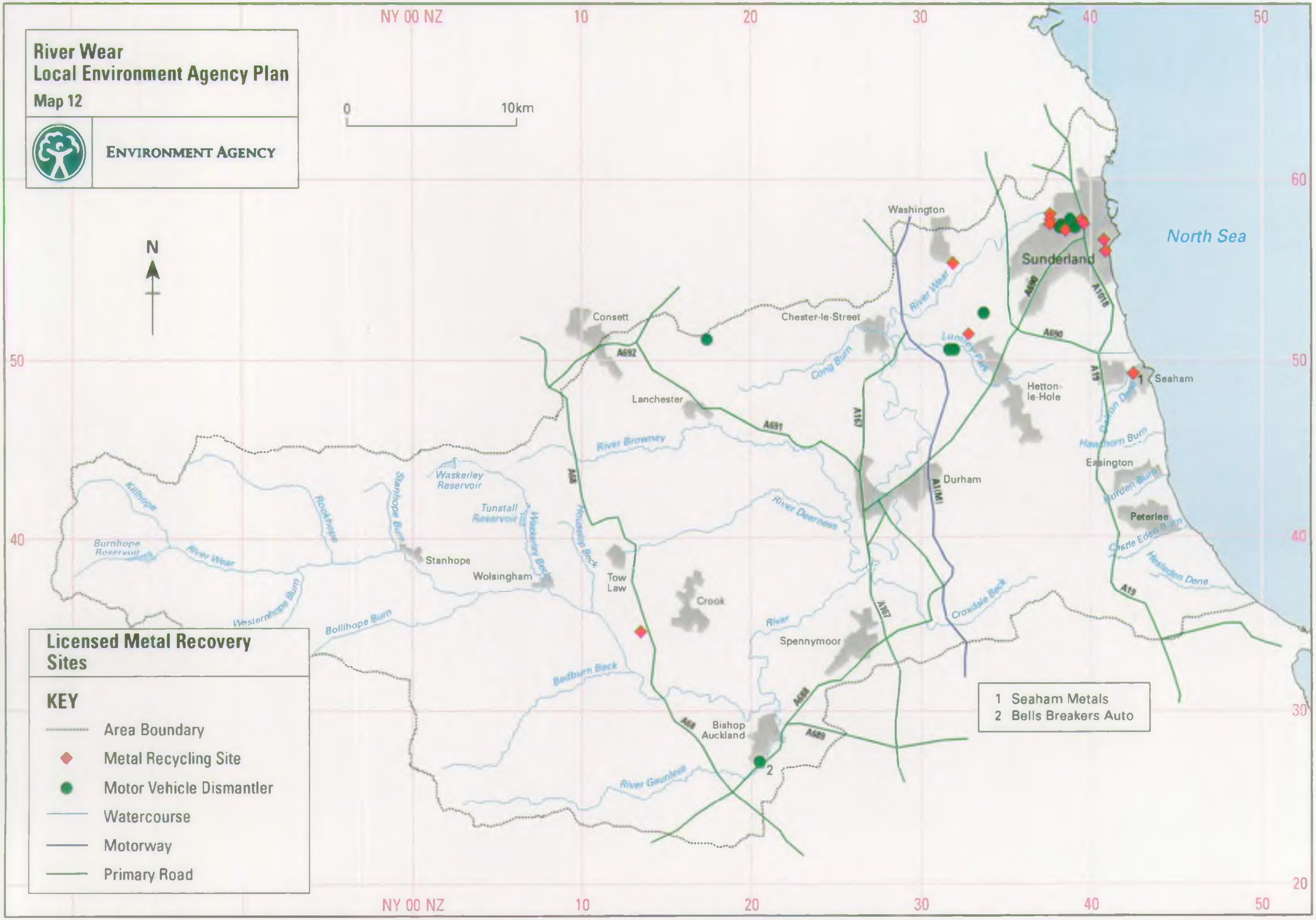
To reduce the wastes being disposed of to landfill and the necessity of paying landfill tax, some of the sites in the Wear area have crushing plants for construction and demolition wastes. The crushed material can then be used as secondary aggregate. Recycling sites at landfills are also becoming increasingly popular.

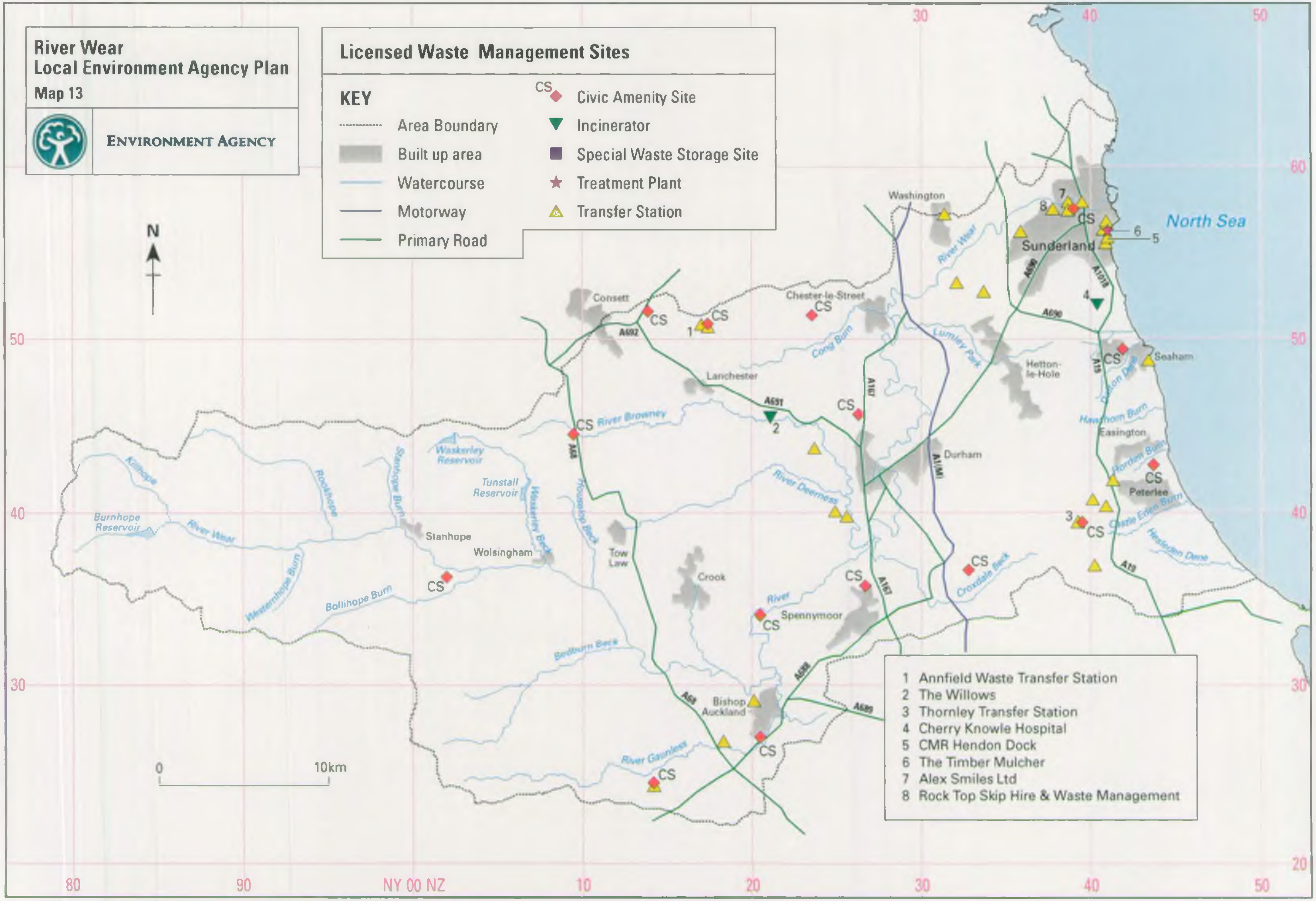
There is one operational incinerator in the Wear area. This is located at Langley Park and is licensed exclusively as a pet crematorium.

The waste management of companies within the area has improved significantly over the past few years with the introduction of the Duty of Care Regulations in 1992, which controls the management of wastes from cradle to grave, and also the increase in the standards required of waste management sites. Due to the abundance of landfill sites in the Wear area and in neighbouring areas, landfill is the main method of disposing of waste. There is still a need to minimise waste to improve business efficiency and move towards sustainable development (see Issue 9, 12 and 13 in Part 1). The Agency will continue to educate producers on better waste management and will promote waste minimisation initiatives.

Information regarding quantities of waste arising and being disposed of in county and district areas will be available in 'A Report on Waste Management in the Northumbria Area'.

This section relates to Issues 9, 10, 11, 12 and 13.


River Wear
Local Environment Agency Plan
Map 12
ENVIRONMENT AGENCY
0
10km
N
Licensed Metal Recovery Sites
KEY
Area Boundary
Metal Recycling Site
Motor Vehicle Dismantler
Watercourse
Motorway
Primary Road
1 Seaham Metals
2 Bells Breakers Auto
North Sea
Sunderland
Washington
Chester-le-Street
Consett
Lanchester
Seaham
Hetton-le-Hole
Easington
Peterlee
Durham
Stanhope
Wolsingham
Tow Law
Crook
Spennymoor
Bishop Auckland
River Wear
River Browney
River Deerness
River Gaunless
Waskerley Reservoir
Tunstall Reservoir
Burnhope Reservoir
Killhope
Rookhope
Stanhope Burn
Waskerley Beck
Houselop Beck
Westernhope Burn
Bollihope Burn
Bedburn Beck
Croxdale Beck
Cong Burn
Lumley Park
Dalton Dene
Hawthorn Burn
Horden Burn
Castle Eden Burn
Hesleden Dene
A692
A691
A68
A167
A1(M)
A690
A1018
A19
A688
A689
NY 00 NZ
10
20
30
40
50
60


River Wear
Local Environment Agency Plan
Map 13
Environment Agency
Licensed Waste Management Sites
KEY
Area Boundary
Built up area
Watercourse
Motorway
Primary Road
Civic Amenity Site
Incinerator
Special Waste Storage Site
Treatment Plant
Transfer Station
North Sea
Sunderland
Washington
Chester-le-Street
Consett
Lanchester
Hetton-le-Hole
Seaham
Durham
Easington
Peterlee
Stanhope
Wolsingham
Tow Law
Crook
Spennymoor
Bishop Auckland
River Wear
River Browney
River Deerness
River Gaunless
Cong Burn
Lumley Park
Croxdale Beck
Bedburn Beck
Bollihope Burn
Waskerley Reservoir
Tunstall Reservoir
Burnhope Reservoir
Killhope
Rookhope
Stanhope Burn
Waskerley Beck
Wellhope Burn
Hawthorn Burn
Castle Eden Burn
Hesleden Dene
Dalton Dene
Horden Burn
A692
A691
A167
A1(M)
A68
A690
A1018
A19
A688
A689
0
10km
NY 00 NZ
1 Annfield Waste Transfer Station
2 The Willows
3 Thornley Transfer Station
4 Cherry Knowle Hospital
5 CMR Hendon Dock
6 The Timber Mulcher
7 Alex Smiles Ltd
8 Rock Top Skip Hire & Waste Management

5.9 Flood Defence

General

Rivers drain groundwater and surface water run-off from land. River channels have a limited capacity and when this is exceeded, flooding occurs. Floodplains convey and store water. The capacity to store and carry water is reduced if significant areas of floodplain have been raised, embanked, or built upon. The loss of storage volume in one location can lead to higher river levels elsewhere. It is therefore neither possible, nor desirable, to alleviate flooding in all areas. The priority for flood defence lies in urban areas not in undeveloped floodplains which should be allowed to play their natural role. The continuity between the river and its floodplain is an essential part of the water cycle. Higher standards of service are needed for urban areas, compared with agricultural areas (see Section 6.2).

The magnitude of a flood can be expressed in terms of the frequency at which that flow is likely to occur, for example, 1 in 10 years or 10% chance in any one year. Similar types of watercourse may respond differently to the same rainfall conditions due to local variations, such as land use.

Localised flooding can occur where watercourses become blocked at particular points, such as under bridges or in culverts. Flooding can also occur where surface water drains are unable to discharge into watercourses due to raised water levels, or further back in the surface water drainage system where their capacity is exceeded.

The Agency has a duty under the Environment Act 1995 to exercise a general supervision over all matters relating to flood defence and land drainage throughout England and Wales. The flood defence powers, duties and responsibilities are generally set out in the Water Resources Act 1991 and the Land Drainage Act 1991.

The Agency's flood defence role covers:

Regulation

- regulation of main river through the Water Resources Act 1991 and local byelaws;
- preparation of surveys under Section 105 of the Water Resources Act 1991 to define the nature and extent of flood risks (see Issue 17);
- issuing of land drainage consents for works in, over, under or within five metres of the top of the riverbank of a main river, or for works in the channel of an ordinary watercourse;
- advising on the control of development to prevent surface water run-off problems;
- preparation of Water Level Management Plans for Sites of Special Scientific Interest or other areas of high ecological or landscape importance, where we are the 'operating authority'.

Operations

- maintenance of main rivers according to available resources and priorities; this includes vegetation control, repairs to earth embankments and other floodwalls, obstruction and blockage removal;
- comparison of target and actual Standards of Service to allow improvement and maintenance works to be prioritised towards those rivers which do not meet their target standards (see Section 6.2);
- undertaking an emergency response role during times of high water levels, patrolling defences, operating flood defence structures, removing blockages and carrying out emergency repairs needed.

Improvements

- building new flood defences in areas where flooding is a serious problem.

Flood Warning

- operating a flood forecasting service using rain gauges, river level data, and weather radar;
- issuing of flood warnings to the public, aiming to provide a two hour warning of commencement of flooding, wherever practicable (see Issue 18).

Flood defence works are carried out in an environmentally acceptable manner, plans should take account of: the impact of proposals on natural features; have regard to protection of features of historic interest; further the conservation and enhancement of flora, fauna and other natural features.

Local Perspective

The upper parts of the catchment are narrow and steep whilst the floodplain widens in the lower reaches where a number of large tributaries add to the flow in the River Wear. Flood defence 'main river' sites are shown on Map 14.

Many of the villages, towns and cities within the catchment have been constructed within the natural floodplain and consequently are at risk of inundation from extreme floods.

Wear

The River Wear drains part of the Pennines. Killhope and Burnhope Burn drain the fells to the south east of Alston, and converge at Wearhead to form the River Wear.

Riverside properties at Stanhope, Frosterley and Wolsingham are affected by extreme events such as that of January 1995 which resulted in significant damage to bridges and fords. Protection flood works at Stanhope are currently being considered. A caravan park at Eastgate, although afforded some protection by a small floodbank, is also affected by such flood events.

The floodplain widens downstream of Witton-le-Wear and subsequently more areas of agricultural land are at risk. Floodbanks, some of which have fallen into disrepair, provide modest levels of protection. In addition, properties at Page Bank, Croxdale and Bishop Auckland are affected during extreme events.

Durham City lies a little further downstream on a large meander. Although the majority of the city was originally constructed on a steeply wooded hill, a small number of riverside residential and commercial properties and the agricultural land in the vicinity are prone to flooding .

Agricultural land around Chester le Street is protected by a series of floodbanks whilst a recently constructed defence scheme in the town itself protects properties from water backing up the Cong Burn from the River Wear.

'Main' River Tributaries

The 'main' river tributaries drain the agricultural land surrounding the middle and lower reaches of the River Wear. As with many of the rivers in the country, villages and towns have encroached onto the floodplain and may be at risk from flooding.

The principal problems are on the Gaunless, Browney and Cong Burn with some localised flooding in the Lumley Park Burn.

Gaunless

The River Gaunless is characterised by natural floodplain areas and their associated meandering channels which have the tendency to silt up causing poor land drainage. Land and property at Ramshaw Mill, South Church and West Auckland are also known to be at risk.

Browney

The principal flood risk in this catchment is at Lanchester where a flood defence scheme protects a number of residential areas. In addition, the River Browney overtops its banks at many locations affecting small areas of agricultural land.

At the confluence with the River Wear at Croxdale, floodbanks protect the A167 and a hotel.

Cong Burn

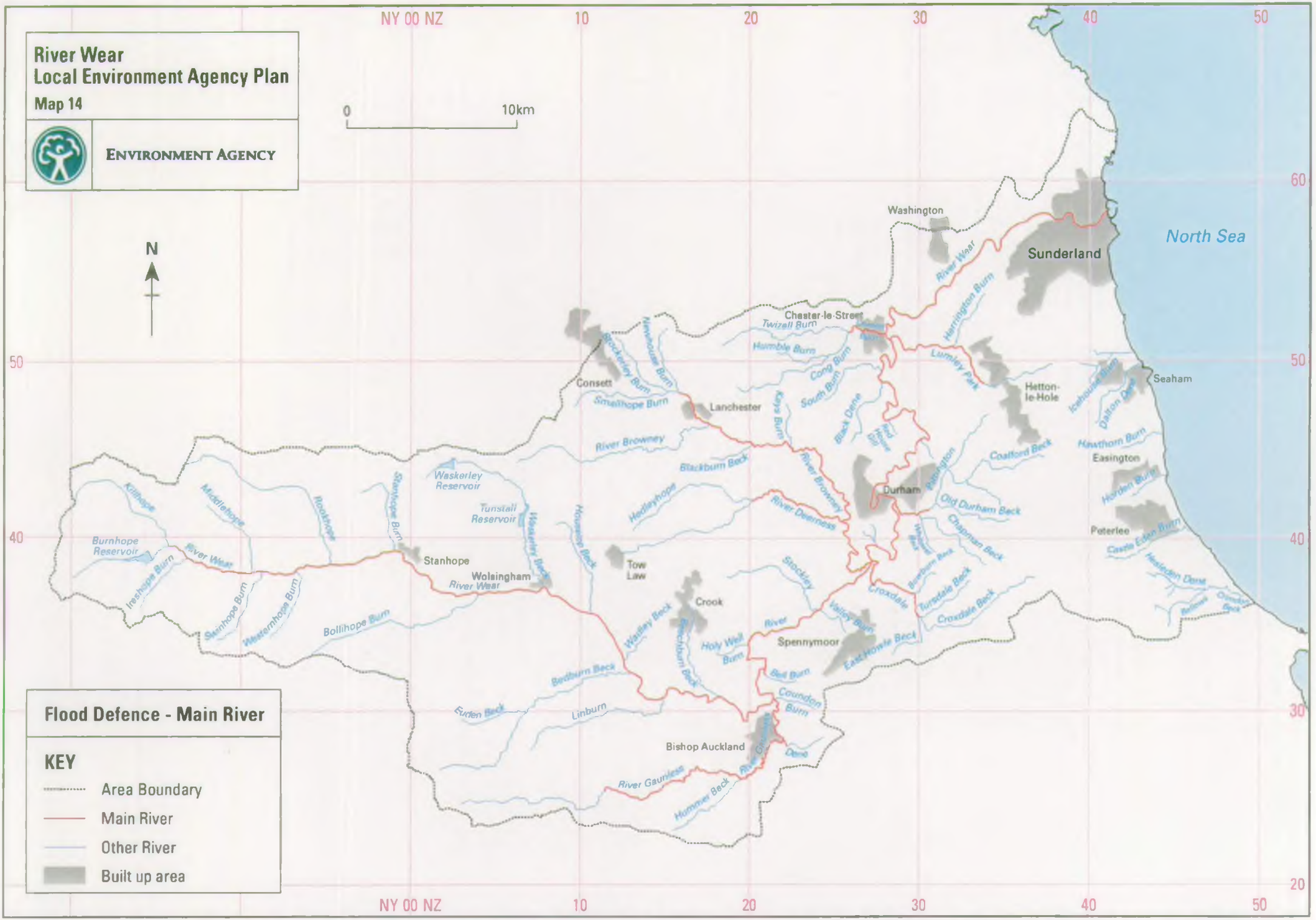
The Cong Burn is culverted under part of Chester le Street and blockages have resulted in flooding to nearby commercial and residential areas. In addition, high water levels in the River Wear can result in water backing up the Cong Burn and flooding properties downstream of the culvert. A recently constructed flood defence scheme will alleviate some of these problems.

Lumley Park Burn

This catchment is characterised by a number of interlinked villages and industrial areas. Flooding problems exist together with poor land drainage, particularly on some of the small tributaries. The flood risk upstream of Dairy Lane Bridge is the most noteworthy.

Tidal Flooding

Properties in the tidal reaches of the River Wear at Fatfield can be affected by a combination of high river and tide levels. The seafronts at Roker and Hendon are frequently affected by storm and surge tide conditions.


River Wear
Local Environment Agency Plan
Map 14
Environment Agency
0
10km
N
NY 00 NZ
10
20
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40
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60
North Sea
Washington
Sunderland
Chester-le-Street
Consett
Lanchester
Seaham
Hetton-le-Hole
Easington
Peterlee
Durham
Stanhope
Wolsingham
Tow Law
Crook
Spennymoor
Bishop Auckland
River Wear
River Browney
River Deerness
Waskerley Reservoir
Tunstall Reservoir
Burnhope Reservoir
Flood Defence - Main River
KEY
Area Boundary
Main River
Other River
Built up area

Ordinary Watercourses

The most significant problem on 'Ordinary' watercourses in the Wear area can be seen along Beechburn Beck at Crook where the local authority is carrying out flood mitigation works.

Problems are also evident at Herrington Burn, Oakley Cross Beck and Beggerside Burn where properties at Shiney Row, West Auckland and Knitsley Mill respectively are at risk.

Shoreline Management Plans (SMP)

Local authorities, in partnership with the Agency and English Nature are, preparing the Shoreline Management Plan for the coastal stretches from the River Tyne to Seaham and Seaham to Saltburn. The plans: improve our understanding of coastal processes; predict the likely future evolution of the coast; identify assets at risk; improve consultation between organisations with an interest in the shoreline. In conjunction with these plans the Agency carries out regular beach monitoring surveys (see Issue 16).

The production of a SMP is being effected in two stages:

- Stage 1 - data collection, analysis and setting of overall Management Objectives and Management Units. This stage has recently been completed.

- Stage 2 - plan preparation, including assessment of strategic coastal defence policy options and identification of favoured policies. This stage is currently underway.

This section relates to Issues 16, 17 and 18.

5.10 Agriculture and Forestry

General

Over 80% of the land in England and Wales is farmland. The way this land is used affects the quality of the environment.

Agriculture

Modern food production can involve the use of a range of agrochemicals. More intensive methods of stock farming may result in silage effluent and slurry disposal problems. Poor management practice involving these materials can lead to the pollution of ground, surface waters, and of land and air. Landowners and farmers are not only food or timber producers they are also responsible for the care of the majority of our countryside. A great many potential enhancements to the countryside are within their control.

There are a limited number of ways that the Agency can directly influence how farmers use land, however we can control and prevent pollution in the same way as we do with other industry. Other agencies such as the Ministry of Agriculture, Fisheries and Food (MAFF) also encourage sensitive farming practices by means of financial incentives. Farmers are also encouraged to follow advice published in free MAFF Codes of Good Agricultural Practice for the Protection of Water, Air and Soil. MAFF provides farmers with free and confidential advice on pollution prevention via ADAS advisers .

Forestry

Well managed woodland does not harm the environment and will often bring benefits. The Forestry Authority regulates forestry in the UK by licensing some operations, such as felling, and providing grant aid through the Woodland Grant Scheme. MAFF, with the Farm Woodland Premium Scheme, also encourages the creation of new woodlands on farms.

The Agency and the Forestry Commission have jointly prepared the '*Forests and Water Guidelines*' which summarises the best practices for forestry in relation to the protection of the water environment.

The Rural White Paper states the Government's intention to increase forestry cover by 50% in the UK over the next 50 years. To ensure that the environment is properly considered, the Agency will continue to liaise with local authorities regarding the production of Indicative Forest Strategies. The Agency will also liaise with the Forestry Authority and local forest managers regarding the production of Forest Design Plans and general forest management issues. A more formal system for the Agency to comment on Forest Design Plans needs to be set up (see Issue 13 in Part 1).

Local Perspective

The Wear area contains 72,881 hectares of agricultural land, some 55.2% of the total land area, managed by a total of 1,135 registered holdings. Land cover within the Wear area is shown on Map 14.

Agricultural land is also classified by MAFF into different quality grades from Grade 1 to Grade 5, then non-agricultural, and urban. The majority (43.7%) of agricultural land in the Wear area is of Grade 3 standard, with 20% Grade 5.

Within the Wear area, three broad areas of rural land use exist. The upper Wear dales area is mainly exposed moorland used as grouse moor, and for rough grazing. The middle/upper Wear area supports mainly sheep hill farming, with some beef cattle. In the plains and lower Wear valley the farming practices are mainly arable, with some sheep and dairy cattle.

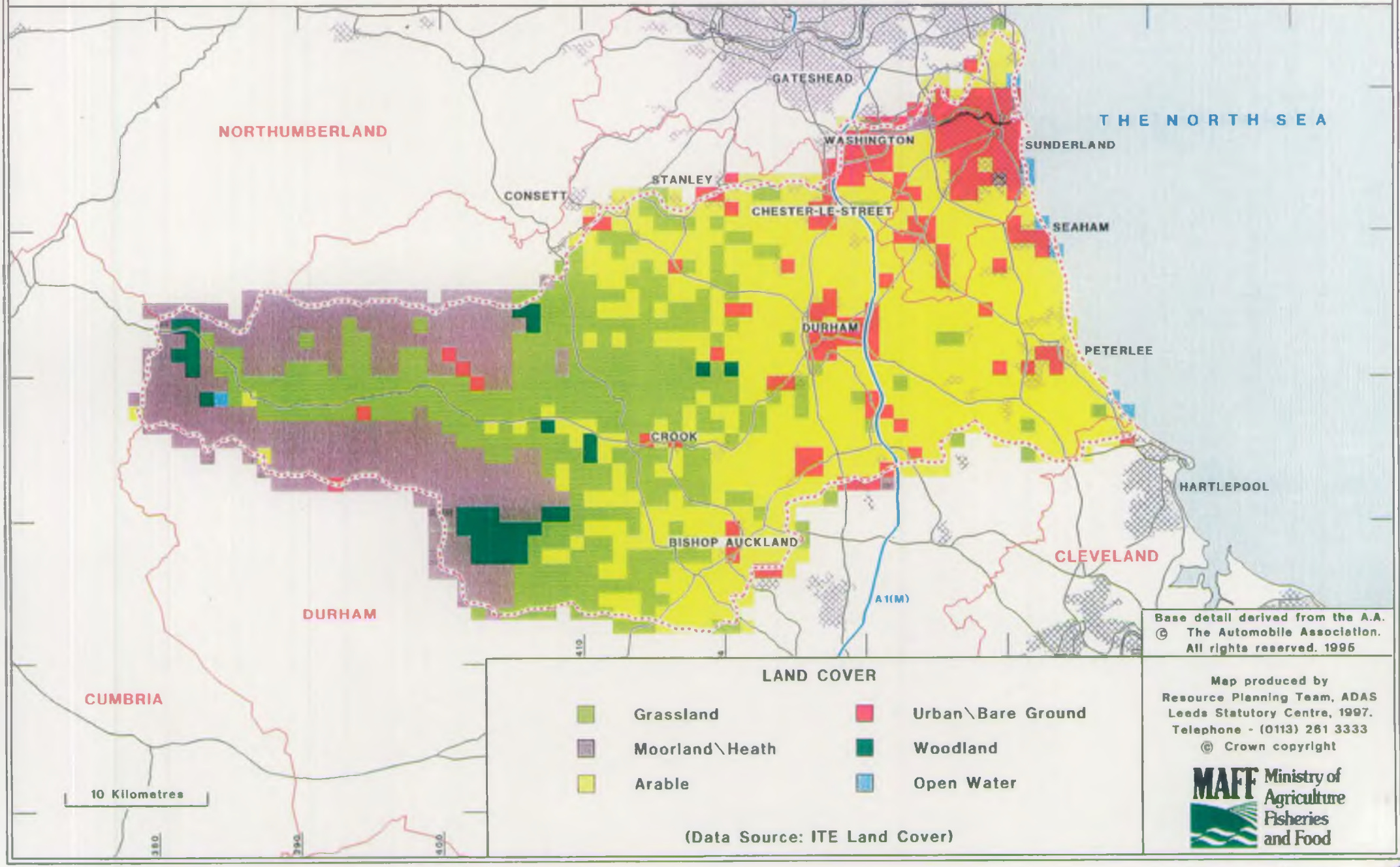
Over recent years, pollution incidents from rural sources have reduced. This reduction is a result of major investment by the agricultural community in anti-pollution equipment such as slurry stores, dirty water systems, pesticide storage areas etc, and an increase in awareness of the problem as a result of pollution prevention campaigns by the Agency, its predecessor organisations, MAFF, ADAS and others (see Issue 13).

As part of its pollution prevention role, the former National Rivers Authority carried out a programme of farm visits to increase farmers' awareness of risks to water quality and, where necessary, advise them on remedial measures to reduce the risk of pollution arising from their farming practices. Pollution risk assessments at farms have been carried out in the South Burn, Blackdene Burn, Old Durham Beck, River Gaunless and Castle Eden Dene areas. Although a risk assessment survey was started in Weardale the survey has not been completed. This is particularly significant as sheep dip is a potential hazard is an upland area such as Weardale.

Bracken

In parts of the Wear area, the spread of bracken often causes problems. Bracken is a very invasive plant which is unpalatable to grazing animals and may have effects on human health. Asulox is a herbicide that is effective against bracken. The Agency has an obligation to control and monitor the application of this and other herbicides if groundwater, surface water or fish may be affected. There has been a

Map 15 DOMINANT LAND COVER BY 1 KILOMETRE SQUARE
WEAR LEAP CATCHMENT



Map produced by
Resource Planning Team, ADAS
Leeds Statutory Centre, 1997.
Telephone - (0113) 261 3333

MAFF Ministry of Agriculture Fisheries and Food

considerable increase in number of hectares of land sprayed in the past few years. This significant increase reflects the general trend for an increase in the area of land sprayed with the herbicide in the whole region.

Pennine Dales Environmentally Sensitive Area

The Pennine Dales Environmentally Sensitive Area (ESA) was designated in 1987 and areas of the upper Weardale and Rookhope Burn are included. Farmers within the area may benefit from incentives under the ESA scheme. The scheme aims to promote farming methods which protect and enhance wildlife, landscape and historic features, which are vulnerable to changes in farming practice.

Countryside Management

Landowners and farmers are not only food or timber producers they are also care of the majority of our countryside. A number of grants and subsidies currently exist to encourage farmers to use methods likely to bring wildlife benefits. Recognising this, the Agency has part-funded a Farming and Wildlife Advisory Group (FWAG) Officer for the Tyne-Tees area who provides farmers with advice on how to integrate farming and conservation (see Issue 20).

The 'set asides' scheme, MAFF's '*Habitat Scheme*' and the '*Countryside Stewardship Scheme*' can provide grant payments to farmers to manage land in a way sympathetic to wildlife and fisheries. One river conservation method is to allow development of a simple buffer strip on riverbanks. Such habitat improvements can prevent bankside erosion and can, over time, increase the depth of a watercourse, providing habitat for fish and other species. Bankside vegetation provides cover, shading and increases the input of terrestrial insects which act as a food source for fish.

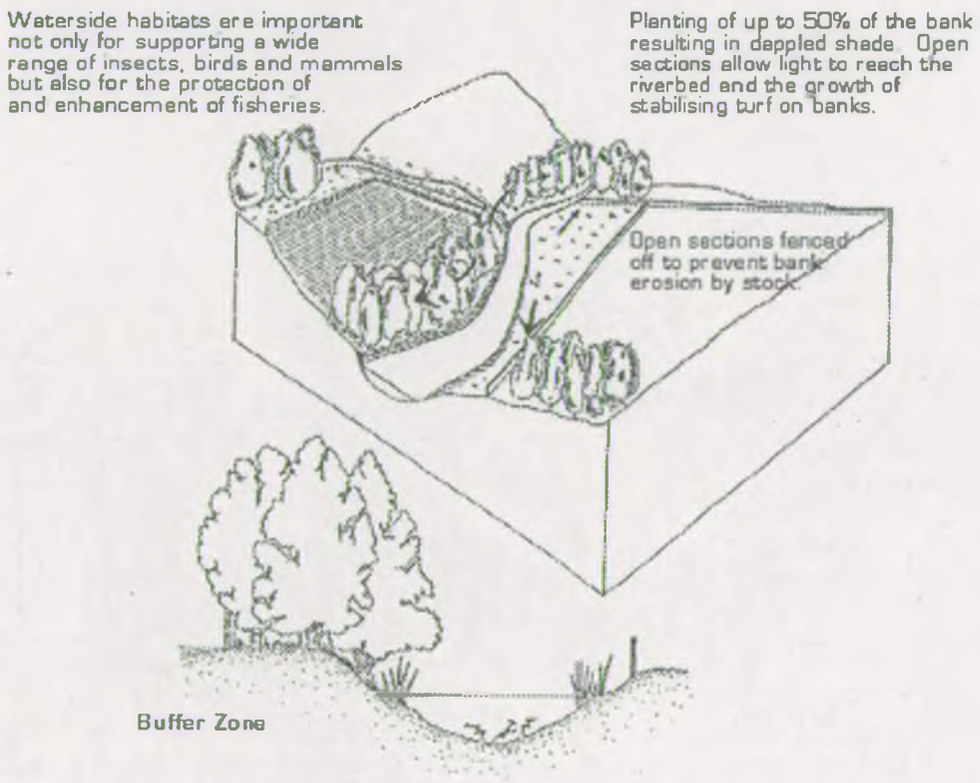


Figure 3 Diagram of River Buffer Zone

Great North Forest

Some areas of South Tyneside, Gateshead and Sunderland are included in an area designated for the Great North Forest. This is a joint initiative between local councils, the Countryside Commission and the Forestry Commission, for the creation of a community forest which may increase recreational activity in the area. Sympathetic planting of deciduous trees can be beneficial. Both deciduous and native coniferous forestry schemes are grant aided by the Forestry Authority.

This section relates to Issues 13 and 20.

5.11 Fisheries

General

Fish populations are influenced by water quality, water quantity and their physical habitat. Fish serve as excellent indicators of the quality of the water environment and, through exploitation by commercial and recreational fisheries, generate financial benefits to local communities. The Agency has a duty to maintain, improve and develop fisheries.

Local Perspective

The River Wear supports important stocks of coarse fish, migratory and non-migratory salmonids, and eels (see Map 16). Salmon and sea trout are abundant in the upper and middle reaches of the river, and tributaries. This is due, in part, to the physical nature of the river and is also a reflection of the good accessibility of the system to migratory salmonids.

In recent years stocking of salmon and sea trout has been carried out to aid recovery of the wild populations following the industrial and urban development of the lower river. As the populations are now judged to have recovered further stocking will only be carried out to maintain current populations. Scientific monitoring of these stocks is carried out annually by electro fishing.

Brown trout are widely distributed throughout the Wear catchment. The natural population is supplemented by stocking from angling clubs.

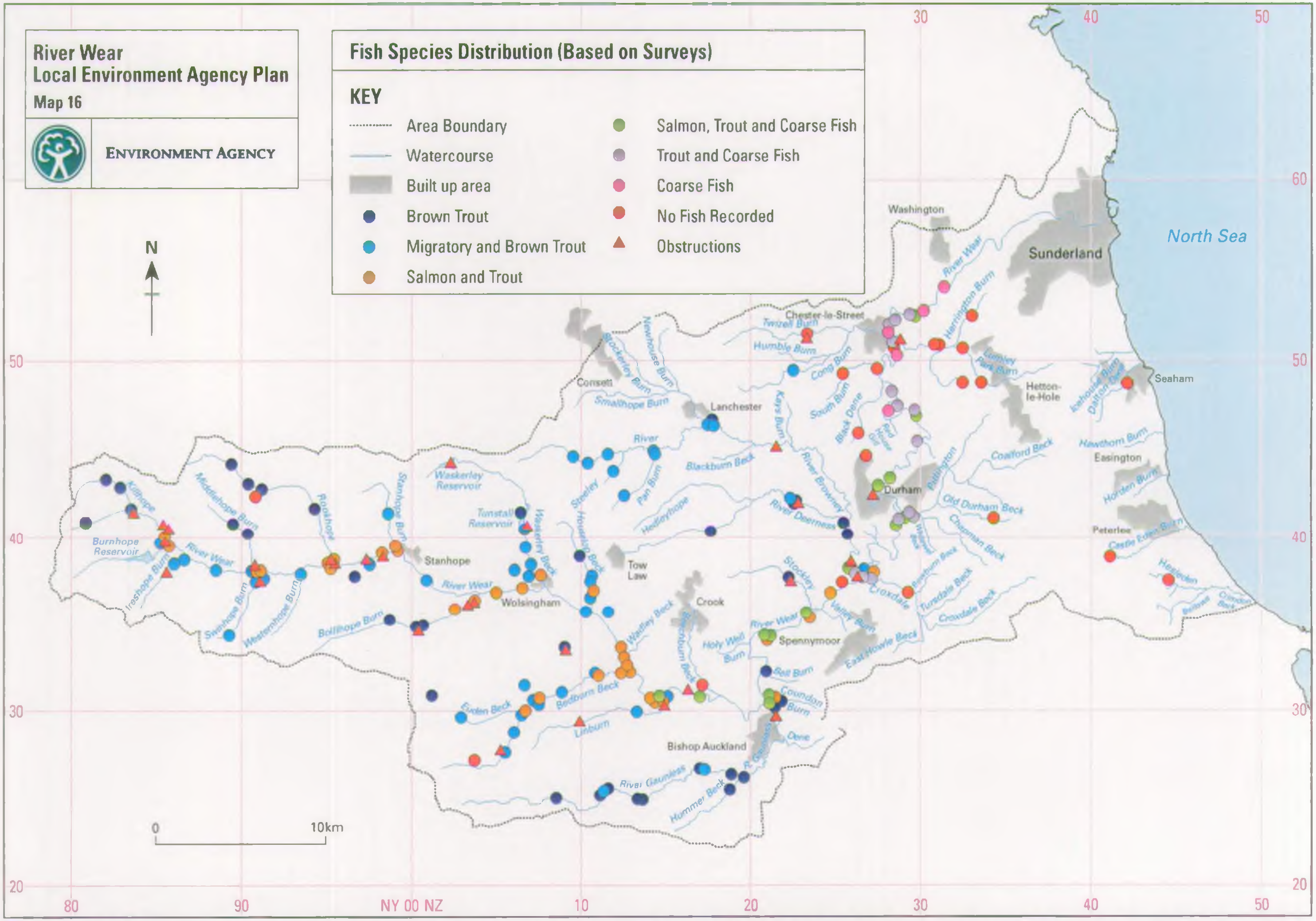
Tidal and lower reaches of the River Wear support good numbers of coarse fish particularly eels, dace and chub with lesser numbers of grayling and other species. The upstream limit of coarse fish distribution appears to be Sunderland Bridge, approximately 50 kilometres from the river mouth, although reports of coarse fish around Bishop Auckland have been received.

Tributaries in the lower Wear area support only limited fish populations reflecting poor water quality conditions. In the middle reaches tributaries such as the Rivers Browney and Gaunless are also affected, in parts, by poor water quality from sewage, industrial and mining inputs (see Issues 4 and 7 in Part 1). However, there are several brown trout fisheries in the Browney catchment supplemented by stocking from local angling clubs. The River Browney currently supports a small run of sea trout although is presently limited by the presence of several obstructions to fish migration. The River Gaunless supports brown trout fisheries to a lesser extent. There is currently no migratory salmonid interest on this river due to a large weir in the lower reaches. Local consultations have been made to ascertain the demand for rehabilitation of migratory salmonid fisheries in these catchments.

There are several stillwater fisheries in the River Wear catchment which are run by private angling clubs. These include coarse fisheries as well as fisheries for stocked trout. The Agency carries out stillwater surveys and can provide fisheries advice and management assistance for stillwaters on request.

The River Wear supports a typical estuarine fish fauna in the more saline reaches. Estuarine resident species such as blenny and flounder are found throughout the estuary. Flounder spend their lives in the estuary only moving out to spawn in coastal waters. Plaice are common in the lower estuary together with saithe and whiting, both of which feed on juvenile fish and crustacea. Further up the estuary, near Washington, the environment supports fewer saithe and plaice and flounder dominate the fish populations in this area of declining salinity.

There is increasing awareness of the importance of bankside vegetation for fish populations, much of the input of food to river ecosystems being derived directly or indirectly from terrestrial sources. Habitat management, providing a range of appropriate vegetation for cover and as a food source, along the river corridor strip, is being investigated as a fisheries management tool in other areas. In some reaches of the Wear, particularly some header streams, there are opportunities for enhancement to these habitats (see Issue 20 and Section 5.10 in Part 2).


River Wear
Local Environment Agency Plan
Map 16
ENVIRONMENT AGENCY
Fish Species Distribution (Based on Surveys)
KEY
Area Boundary
Watercourse
Built up area
Brown Trout
Migratory and Brown Trout
Salmon and Trout
Salmon, Trout and Coarse Fish
Trout and Coarse Fish
Coarse Fish
No Fish Recorded
Obstructions
N
0
10km
North Sea
Sunderland
Washington
Chester-le-Street
Hetton-le-Hole
Seaham
Easington
Peterlee
Durham
Lanchester
Consett
Stanhope
Wolsingham
Tow Law
Crook
Spennymoor
Bishop Auckland
Burnhope Reservoir
Waskerley Reservoir
Tunstall Reservoir
River Wear
River Gaunless
River Browney
River Deerness
Croxdale
Killhope
Middlehope Burn
Rookhope
Stanhope Burn
Bollihope Burn
Waterhope Burn
Swinhope Burn
Ireshope Burn
Waskerley Beck
Houselop Beck
Stockerley Burn
Newhouse Burn
Smallhope Burn
Pan Burn
Hedleyhope
Blackburn Beck
Kays Burn
Cong Burn
South Burn
Twizell Burn
Humble Burn
Herrington Burn
Lumley Park Burn
Coalford Beck
Hawthorn Burn
Horden Burn
Castle Eden Burn
Old Durham Beck
Chapman Beck
Tursdale Beck
Croxdale Beck
East Howle Beck
Valley Burn
Stockley
Wadley Beck
Beechburn Beck
Holy Well Burn
Bell Burn
Coundon Burn
Dene
Linburn
Bedburn Beck
Euden Beck
Hummer Beck
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20
80
90
NY 00 NZ
10

5.12 Landscape and Nature Conservation

General

All functions of the Agency have duties under the Environment Act 1995 towards landscape and nature conservation. Conservation needs to be considered in undertaking all Agency works and advice is available both internally and externally.

Under Section 8 of the Environment Act 1995 the Agency has a duty to consult English Nature over any works likely to affect Sites of Special Scientific Interest, and the National Park Authority over any work in a National Park.

In addition to this specific legislation the Agency is required to comply with other wildlife legislation such as the Wildlife and Countryside Act 1981 and the European Habitats Directive.

In order to undertake its conservation duties effectively the Agency must liaise with a variety of organisations, such as, local authorities, national parks, English Nature, County Wildlife Trusts and the Royal Society for the Protection of Birds. Between 1989 and 1993 the former National Rivers Authority undertook a programme of River Corridor Surveys for all rivers in the Wear area. These surveys provide information on habitat type alongside watercourses and within 50 metres to either side, and act as a baseline against which the impact of proposed works can be judged. The Agency has recently developed a technique called River Habitat Survey which provides an inventory of physical features along watercourses enabling the importance of these features to be assessed in a national context.

The Agency has a major role to play in the implementation of the UK Biodiversity Action Plan. This is an international agreement made by the UK Government at the Earth Summit in Rio in 1992. The Agency has been allocated as the lead agency or contact for the conservation of the otter, water vole, freshwater pearl mussel, and native crayfish.

The Agency is both a 'relevant' and a 'competent' authority under the European Habitats Directive. This requires us to be aware of sites of conservation importance on a European scale, to be designated as Special Areas of Conservation (SAC). The Directive also applies to sites designated as Special Protection Areas (SPAs) under the Birds Directive. Within these areas the Agency must ensure that their 'favourable conservation status' is retained when undertaking or authorising any works. In addition the Agency is required to review all consents affecting these areas between 1998 and 2004.

Under Section 6 of the Environment Act 1995 the Agency has a duty to:

- promote the conservation and enhancement of the natural beauty and amenity of inland and coastal waters and of land associated with such waters;
- promote the conservation of flora and fauna which is dependent on an aquatic environment.

It is up to the Agency to decide to what extent it undertakes this duty which clearly covers all land dependent on water, including ponds, wetlands and coastal areas.

Under Section 7 of the Environment Act 1995 the Agency has a duty to:

- further the conservation and enhancement of natural beauty and the conservation of flora, fauna and geological or physiographical features of special interest in carrying out all functions other than its pollution control functions;
- have regard to the desirability of conserving flora, fauna and geological or physiographical features of special interest in carrying out its pollution control functions.

The Agency needs to be aware of initiatives being undertaken by other Government agencies in the countryside. Of particular importance are English Nature's Natural Areas Programme and the Countryside Commission's Countryside Character Programme. There is a role for the Agency in assisting with the implementation of those proposals within its remit.

Local Perspective

The Wear area contains a diverse range of features of high conservation value. Habitats range from the exposed high moorland of the Pennines, species rich meadows, steep wooded gills and diverse braided channels to the Magnesian Limestone grassland and wooded bluffs of the middle and lower reaches, while remnants of salt marsh are still found in Sunderland. The lower reaches of the river feature large meandering sections which have led naturally to the formation of oxbow lakes. Many of these have been modified by man but the remainder provide important wetland features.

The remainder of the water courses in the Wear area flow eastwards of the Magnesian Limestone escarpment. These streams are relatively short in length and have cut steep sided valleys or denes. Their inherent inaccessibility means that many of them have remained wooded. Castle Eden Dene and Hawthorn Dene have developed semi-natural, base rich woodlands over a diverse and rich ground flora. Many of these streams suffer from low flows and frequently dry out, which results in an impoverished aquatic fauna.

Special Areas of Conservation

To date there are no designated SPA's or SAC's in the Wear LEAP area. English Nature is in the process of putting forward a number of sites for consideration (see Issue 23).

The sites currently proposed are:

(a) Castle Eden Dene (pSAC) - Yew dominated woodland.

(b) Thrislington (pSAC) - Dry grasslands and scrublands on limestone.

(c) North Pennine Dales Meadows (pSAC) - series of SSSIs demonstrating mountain hay meadows.

(d) North Pennine Moors (pSAC) - series of SSSIs with a high diversity of habitat/species of European importance, including blanket bog, hard water springs depositing lime, calcium-rich spring water fed fens and high altitude plant communities associated with areas of water seepage.

(e) North Pennine Moor (pSPA) - series of SSSIs which support significant numbers of species listed in the EU Birds Directive (under Articles 4.1 and 4.2) including merlin, golden plover, dunlin, curlew and redshank.

Sites of Special Scientific Interest (SSSIs)

There are 63 SSSIs in the Wear LEAP area. This series of SSSIs represent a wide range of habitats including Magnesian Limestone grasslands, woodland, unimproved hay meadows, acid grassland, blanket bog, moorland and a number of low altitude mires and fens. In addition some sites are important from a geological or geomorphological aspect. Castle Eden Dene is the only National Nature Reserve within the Wear area. This site is important for its ancient semi-natural broadleaf woodland, in which the occurrence of yew is of particular interest. (Areas with landscape and statutory designations are shown in Map 17).

As well as the statutory conservation sites, there are many sites within the Wear area that are locally important. County important sites have been identified by Durham Wildlife Trust. These sites tend to cover the same suite of habitats designated as SSSIs, and are afforded a significant degree of protection through the Town and Country Planning system. A similar degree of protection is afforded to Regionally Important Geological Sites (RIGS).

The Agency will seek to conserve and enhance these sites through its regulatory and advisory activities.

Biodiversity Action Plans

The UK Biodiversity Action Plan (BAP) identifies a number of species relevant to the Wear area and which require active conservation action. In the Wear area the Agency is the contact point or lead agency for the otter, native crayfish, pearl mussel and the water vole. Details of our involvement in the Biodiversity Action Plans is given in Section 6.4 and Issue 22.

Tyne and Wear Conservation Strategy

The Sunderland area of the Wear LEAP is covered by the Tyne and Wear Conservation Strategy, a joint venture between the 5 local authorities (Newcastle City Council, Sunderland City Council, Gateshead MBC, South Tyneside MBC, and North Tyneside DC), the Nature Conservancy Council (now English Nature), the RSPB and the Durham and Northumberland Wildlife Trusts'.

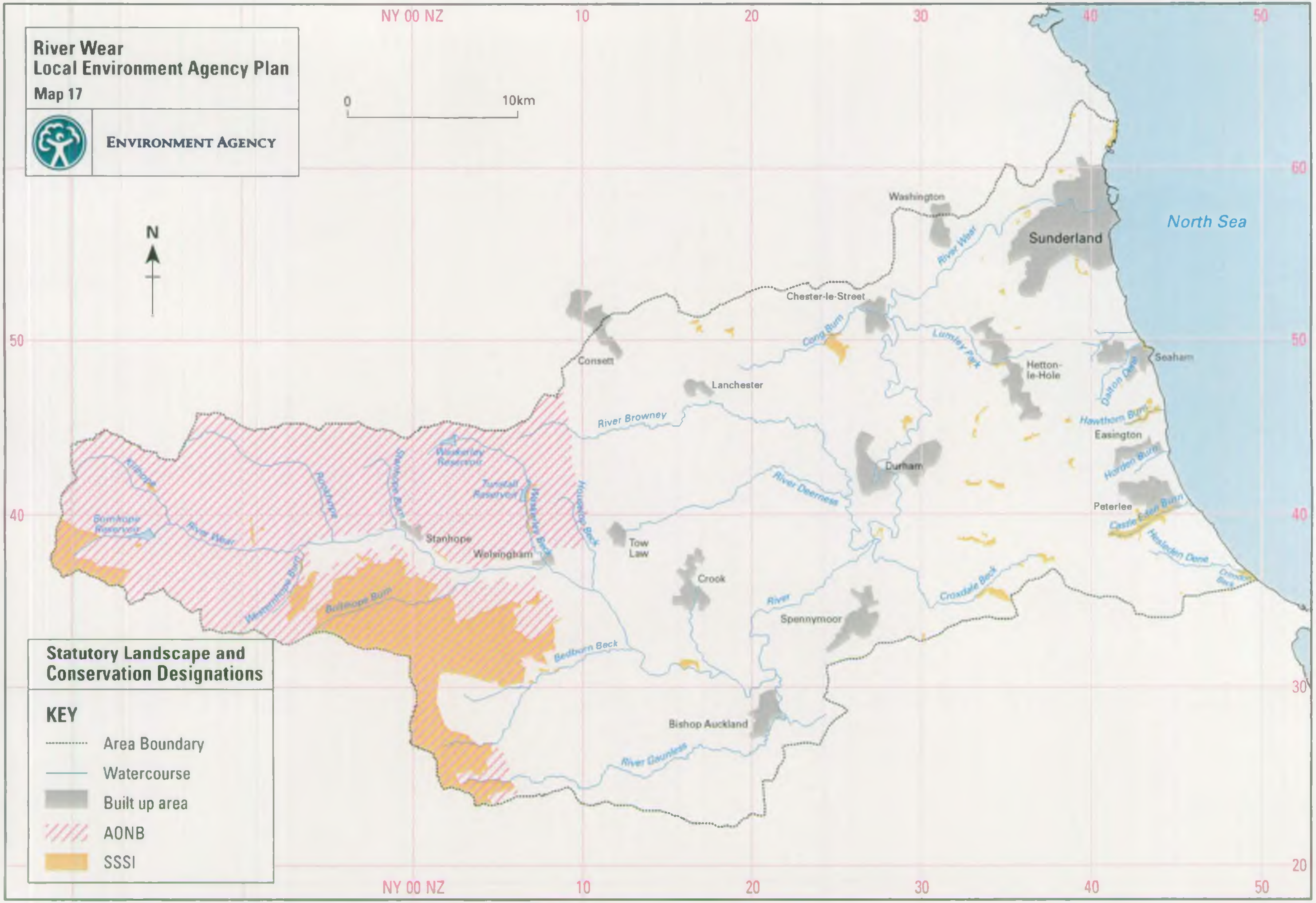
The strategy has five basic aims:

(a) to identify rare habitats and species, and to promote their protection and proper management;

b) to identify opportunities for nature conservation, to use these to create new wildlife sites and to improve existing ones;

(c) to create and protect a network of wildlife corridors to link sites and to encourage the movements of plants and animals;

(d) to make areas of wildlife interest more accessible to the public;


River Wear
Local Environment Agency Plan
Map 17
Environment Agency
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10km
N
NY 00 NZ
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20
30
40
50
60
North Sea
Sunderland
Washington
River Wear
Chester-le-Street
Cong Burn
Lumley Park
Seaham
Hetton-le-Hole
Dalton Dene
Hawthorn Burn
Easington
Horden Burn
Peterlee
Castle Eden Burn
Hesleden Dene
Consett
Lanchester
River Browney
Durham
River Deerness
Croxdale Beck
Tow Law
Crook
Spennymoor
Bishop Auckland
River Gaunless
Bedburn Beck
Bollihope Burn
Stanhope
Wolsingham
Tunstall Reservoir
Waskerley Reservoir
Burnhope Reservoir
Statutory Landscape and Conservation Designations
KEY
Area Boundary
Watercourse
Built up area
AONB
SSSI

(e) to generate interest in natural history and to encourage community involvement in the creation , management and enjoyment of these sites.

This strategy can be used by the Agency to persuade the local authorities to include those conservation issues it deems important to be incorporated into the various Unitary Development Plans (UDP) or Local Plans.

Cong Burn

Over the last two years the Agency in partnership with Chester le Street District Council, has been working on a project to improve the downstream stretch of the Chester Burn. This has involved breaking the stream out of its original concrete channel, and restoring it to a more "natural" form. "Cobbles" have been added to the stream bed and a number of small block stone weirs have been constructed to add diversity to the flow, while at the same time providing attractive visual features. The margins of the stream have been planted with a mixture of native aquatic and marginal plants, while the surrounding area has been substantially landscaped to provide a link between the town and riverside.

Riverbank Habitat

Farmers, landowners, land managers and, to a degree, angling clubs can greatly influence the way the Wear area's rivers, streams and wetlands are managed. Poor bankside management can have numerous detrimental impacts on the aquatic environment. These are not just restricted to the degraded site, but can have wider catchment implications (see Issue 20 and Section 5.12 in Part 2).

In the Wear area two of the main areas of concern are the degradation of bankside vegetation through overgrazing, and increased or unnatural levels of erosion, generally as a result of poor bankside vegetation structure. It is therefore essential that the Agency work closely with landowners etc by providing guidance, education, advice and, where possible, financial assistance in developing a more sustainable approach to riverbank management.

To this end the Agency is currently funding the Tyne Tees FWAG advisor. This partnership with FWAG is aimed at improving the wildlife and landscape value of the countryside, especially in relation to the water environment, whilst helping to create closer links between the Agency and the farming community.

In addition the Agency will continue to raise the profile of wetland and river management within the Countryside Stewardship Scheme.

Invasive Plants

Non-native, vigorously invasive plants such as giant hogweed and Japanese knotweed are beginning to dominate the riparian zone, in some areas of the catchment, to the detriment of native flora and fauna. In addition to this threat to wildlife, giant hogweed is a potential threat to human health as the sap of the plant is photo toxic, ie it can, on contact with the skin, and on exposure to sunlight, result in severe , painful and recurring blisters.

The Agency does not have a duty to control any of these plants, this is the responsibility of the landowner. It has however, been assisting in a NERC sponsored LIFE project, investigating the Spatial and Temporal Scale Dependencies in the Invasion of Riparian Habitats by Alien Weeds. The Rivers Derwent, Tyne, Wear and Tees will form the basis of this study.

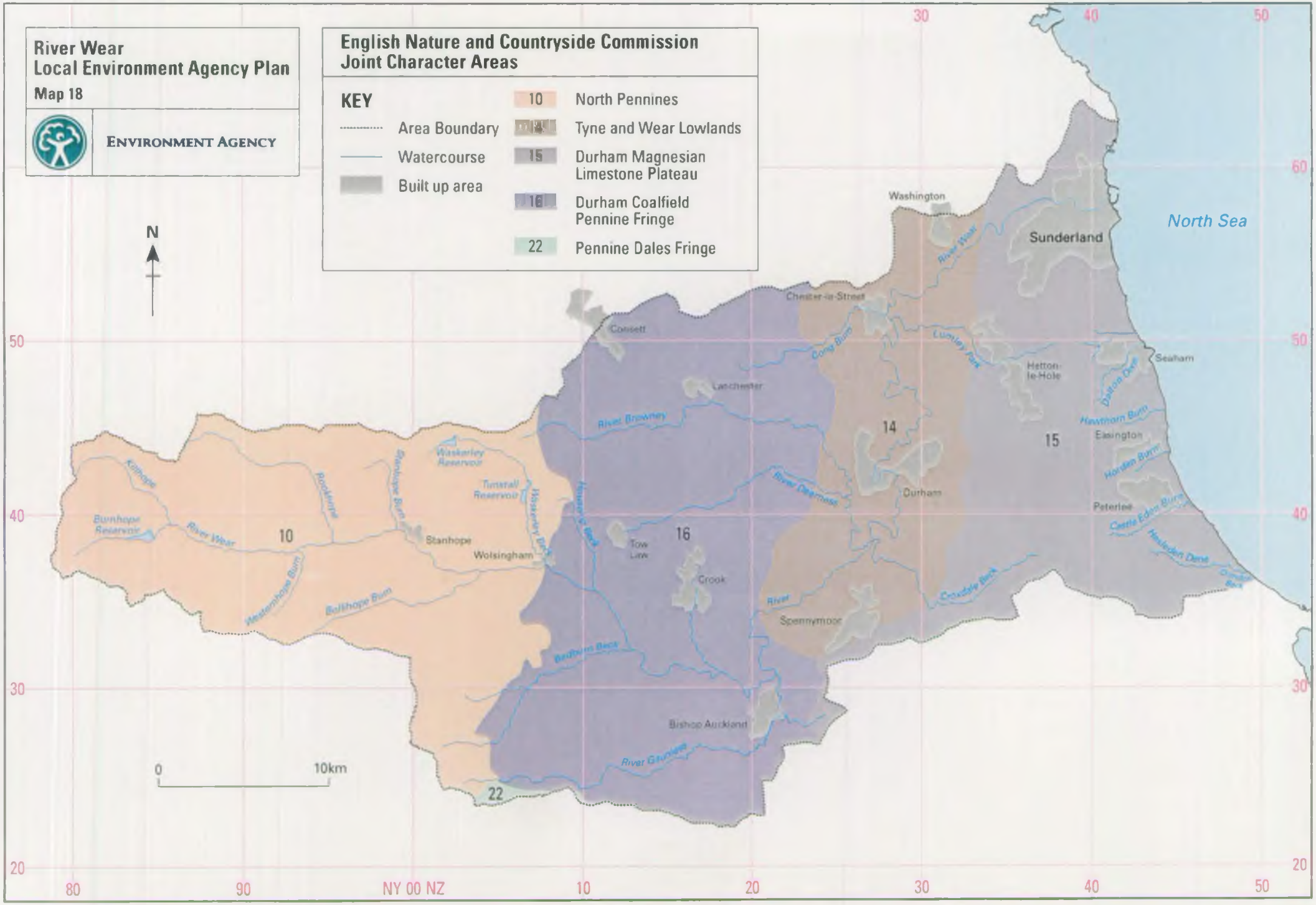
Landscape

The main statutory landscape designation within the Wear area is the North Pennines Area of Outstanding Natural Beauty (AONB) (see Map 17).

Some areas of the upper Weardale and Rookhope Burn are in an Environmentally Sensitive Area (ESA) (see Section 5.10).

Some parts of the Wear area are included in an area designated for the Great North Forest. This is a joint initiative between the Local Councils, the Countryside Commission and the Forest Commission, for the creation of a community forest which may increase recreational activity in the area (see Section 5.10).

In addition to statutory designations the Countryside Commission and English Nature are currently developing their joint Countryside Character Programme. The Countryside Commission's Countryside Character Programme considers actions required to maintain and enhance the landscape of areas with distinct landscape character. English Nature's Natural Areas Programme focuses on the management required for areas with distinct habitat types. Wherever possible, English Nature and the Countryside Commission have agreed that their boundaries should coincide and have created a 'new map of England' (see Issue 14 and Map 18 for details of this in the Wear LEAP area). This section relates to Issues 17, 20, 22, and 23 and Sections 5.10 and 5.11 in Part 2.


River Wear
Local Environment Agency Plan
Map 18
Environment Agency
English Nature and Countryside Commission
Joint Character Areas
KEY
Area Boundary
Watercourse
Built up area
10 North Pennines
11 Tyne and Wear Lowlands
15 Durham Magnesian Limestone Plateau
16 Durham Coalfield Pennine Fringe
22 Pennine Dales Fringe
N
North Sea
Washington
Sunderland
Chester-le-Street
Consett
Lanchester
Hetton-le-Hole
Seaham
Easington
Peterlee
Durham
Crook
Tow Law
Stanhope
Wolsingham
Bishop Auckland
Spennymoor
River Wear
River Browney
River Deerness
Cong Burn
Lumley Park
Dalton Dene
Hawthorn Burn
Horden Burn
Castle Eden Burn
Hesleden Dene
Crimdon Beck
Coxhoe Beck
Waskerley Reservoir
Tunstall Reservoir
Burnhope Reservoir
Killhope
Rookhope
Stanhope Burn
Hisehope Burn
Hisehope Beck
Westernhope Burn
Bolshope Burn
Bedburn Beck
River Gaunless
10
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16
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90
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50

5.13 Tourism and Recreation

General

Recreation and tourism is a very significant use of the water environment by people. It is now rightly recognised as an industry which plays a vital role in the local economy, even where there is no direct charge for the use of water and associated amenities. Recreation may be of an informal type, eg walking beside water, viewing the scenery and enjoying the fauna and flora, or it may actively involve water as in rowing, sailing and canoeing.

The Agency has a duty to promote the use of water and land associated with water for recreation and to take recreation into account in the performance of all its functions. The Agency can also pass byelaws for purposes connected with carrying out its functions.

The Agency has an important role in liaising with and advising other bodies to ensure that a strategic approach is taken to coordinate the development and management of recreation in a way which allows the optimum potential of individual areas to be realised, as well as for the region as a whole. As an environmental organisation we support developing tourism and recreation in a way which is sustainable for the environment, local economies and the activities themselves.

Access to the rivers and still waters is controlled by landowners, except where public footpaths or bridleways exist. In England there is no legal right to navigate along rivers, except where a right of navigation has been established or in most estuarine waters. In most cases, the riparian owner has ownership of the water to the middle of the river. Consequently, recreational activities are usually controlled through formal or informal agreements with landowners.

Local Perspective

Map 19 shows recreational activities within the area.

Walking and cycling

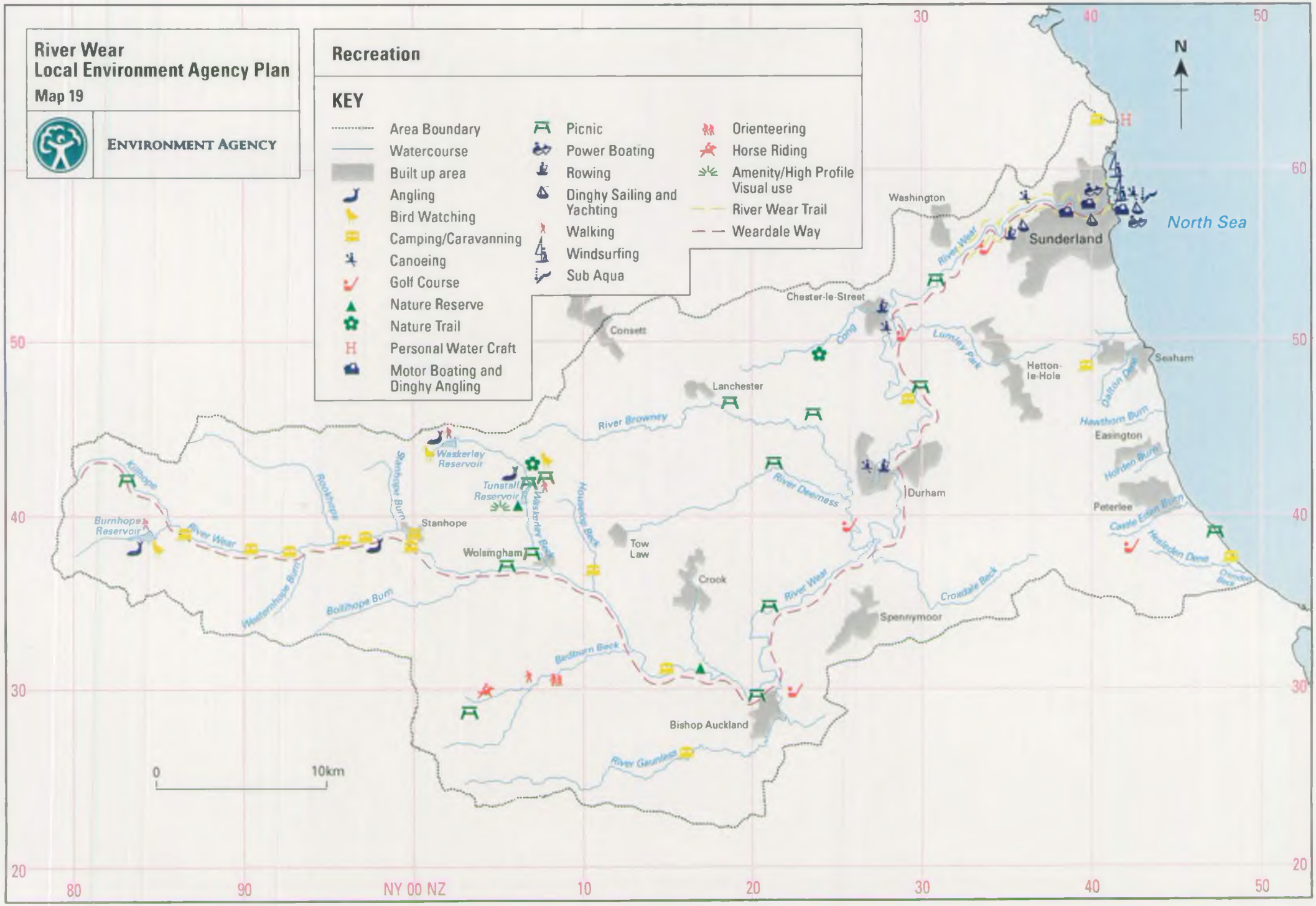
Informal recreational activities, like walking and cycling, take place throughout the Wear area and are often focused on the river as a key feature in the landscape with relatively easy access. The area is well served by a network of footpaths and public rights of way including the Weardale Way, which runs along the length of the main river from its source at Killhope Burn to the sea. Some old railways routes have been adapted to form walkways and cycle paths near rivers including the Lanchester and Deerness Valley walks. Cycling for leisure is becoming more popular and cycle touring is particularly encouraged to boost tourism in rural areas. One of the coast to coast (C2C) routes promoted by Sustrans passes through Rookhope Stanhope, along the Waskerly Way and on through Chester le Street and Washington to Sunderland.

Public access to the River Wear for walking, cycling, picnicking and camping is available at many points in the villages along the upper reaches. Some of the most popular waterside venues for informal recreation further down stream include Hamsterley Forest, Witton Park and Witton-le-Wear, Auckland Park at Bishop Auckland, Durham City, Chester le Street Riverside Park and the banks of the estuary. As well as being a key site for leisurely recreation, Hamsterley Forest is very popular for orienteering, horse riding and mountain biking. These activities are also encouraged at James Steel Park in Washington and Chester le Street Riverside which is a gateway site with strategic routes for these activities leading into the Great North Forest.

The footpath and cycle route network along the banks of the estuary have been improved in recent years by the Tyne and Wear Development Corporation and others including the Sunderland City Council. These waterside routes now incorporate many works of art, especially around the North Dock Marina, and are already very popular public amenities used by locals and visitors to Wearside. The River Wear Trail stretches for 15 miles along both banks of the estuary from the sea to Fatfield. It sets out a route which passes, and describes on information boards, many features of natural interest as well as historical and industrial heritage. The trail is managed and maintained by Sunderland City Council after it was developed with support from the Urban Programme and the Countryside Commission.

Canoeing

Unlike the River Tyne, there is no general canoe access agreement on the River Wear and misunderstandings about this have given rise to conflict in the past. Members of the public are allowed to canoe or row on limited stretches of the River Wear at Chester le Street Riverside and in Durham City. However, there is no right of navigation between these sites or between Chester le Street and the estuary where there is an undisputed right to navigate upto the tidal limit. Upstream of Stanhope Ford the Agency owns sole fishing rights for 2.3 miles of double bank and 1.9 miles of single bank where the fishing is currently let to the public on a day ticket basis. This stretch of the River Wear also has potential for canoeing and the Agency is liaising with the British Canoe Union (BCU) and riparian owners to develop a model access agreement which will allow canoeing and angling to occur in harmony on this reach.


River Wear
Local Environment Agency Plan
Map 19
Environment Agency
Recreation
KEY
Area Boundary
Watercourse
Built up area
Angling
Bird Watching
Camping/Caravanning
Canoeing
Golf Course
Nature Reserve
Nature Trail
Personal Water Craft
Motor Boating and Dinghy Angling
Picnic
Power Boating
Rowing
Dinghy Sailing and Yachting
Walking
Windsurfing
Sub Aqua
Orienteering
Horse Riding
Amenity/High Profile Visual use
River Wear Trail
Weardale Way
N
North Sea
Sunderland
Washington
Chester-le-Street
Consett
Lanchester
Seaham
Hetton-le-Hole
Easington
Peterlee
Durham
Stanhope
Wolsingham
Tow Law
Crook
Spennymoor
Bishop Auckland
Waskerley Reservoir
Tunstall Reservoir
Burnhope Reservoir
River Wear
River Browney
River Deerness
Bollihope Burn
Bedburn Beck
River Gaunless
Hawthorn Burn
Hardon Burn
Castle Eden Burn
Hesledon Dene
Croxdale Beck
Lumley Park
0
10km
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NY 00 NZ
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Watersports

Rowing is the only watersport practised on the freshwater stretch of the River Wear. There is an active club based at Chester le Street but the City of Durham Club is the biggest centre for rowing on the River Wear and possibly in the North East of England. University colleges, schools and a large and historic amateur rowing club all use the river. The Durham Regatta (known locally as the Henley of the North) is a major national event which draws teams from all over the country who compete in head to head races for a whole weekend. In 1995, over 100 years after the first regatta, siltation of the river threatened to prevent the event from taking place. The National Rivers Authority (now part of the Environment Agency) dredged the river as part of some habitat creation work, also ensuring that the Durham Regatta will continue for years to come.

Like many watersports, rowing is becoming more popular on the Wear estuary with particular demands from the new University of Sunderland and South Hylton rowing club. In general, improving water quality in the estuary, the decline in commercial traffic and an increasing interest in recreational, sailing, boating and watersports, generated the need for a strategy to make optimum use of the estuary in a sustainable manner which accommodated everyone. To this end, the Agency has been major partners in the Tyne and Wear Watersports Development Project (TWWDP) and has been working with other partners under the auspices of the project to implement its strategy 'Making Waves' by improving co-ordination, access, facilities, promotion and training for all watersports and recreational boat users.

Events at Sunderland which the Agency has helped to promote include the National Osprey Sailing Championships, East Coast Week and the annual Frostbite Series of races. All of these sailing events were organised by and run from Sunderland Yacht Club. The Agency also supports the annual Youth Afloat event which is organised by the Sunderland Watersports Project Officer to offer taster sessions in a range of watersports, fishing and informal water-based activities to children of all abilities at school in Sunderland. The Sunderland Watersports Project was initially funded by the Agency and other partners to address the training needs highlighted in 'Making Waves' and it has been successful at securing funds from different sources. Courses have already been run for members of the public throughout the north east in practical and theory related aspects of all water sports including nautical studies, VHF operator licence, day skipper and BCU senior instructor. This thriving project has recently gained charitable status and is now part of the Marine Activity Centre incorporating Sunderland Marina.

Sunderland Marina is important regionally as the only facility between Hartlepool and the River Tyne. It has 80 fully serviced pontoon berths and about 120 chain moorings all with unrestricted tidal access. With these facilities, along with a public slipway, the marina is likely to be increasingly used as an access point for the North Sea. Offshore activities practised within the Wear area include sailing (especially dinghy racing), cruising, dinghy angling and sub-aqua diving. Other watersports like canoeing are practised on the beach within the piers, although windsurfers are encouraged to use the lake at Hetton Lyons.

Bathing Beaches

There are 5 designated Bathing Waters within the Wear area, the most popular of which is Roker. This sandy beach with good water quality is ideal for activities like bathing and rockpooling. Roker and the other beaches are an important amenity for locals and visitors. The revenue from day trippers and tourists makes a significant contribution to the local economy of the coast.

Wildfowl and Wetlands Trust

Another tourist attraction within the Wear area is the Wildfowl and Wetlands Trust's Waterfowl Park at Washington. This national attraction is the third largest of its kind in Europe and contains swans, geese, ducks and large numbers of migrating fowl.

This section relates to Issues 15, 16 and 24.

5.14 Angling and Net Fishing

General

Angling continues to be one of Britain's most popular participation sports. Net fishing for freshwater species is limited to migratory salmonids at sea and eels in rivers and stillwaters.

Angling

Fishing rights in non-tidal waters belong to the riparian owner but they can be leased or purchased by angling clubs or syndicates who then control the rights, which may include rights of access to the water body.

Under the Environment Act 1995 we have a duty to maintain, improve and develop fisheries under our jurisdiction. Under the Salmon and Freshwater Fisheries Act 1975 all anglers, aged twelve years and over, fishing in England and Wales must possess a current rod licence.

Net Fishing

Net fishing for migratory salmonids and eels is controlled by the Agency through licences. Along the coast, our jurisdiction in managing and regulating salmon and sea trout fisheries extends six miles to sea. Jurisdiction over the sea fishing industry from the coast to six miles to sea falls to the Sea Fisheries Committees (SFCs). Beyond this limit, MAFF takes responsibility.

Net fishing for migratory salmonids use drift nets at sea, with some fixed nets along the coast known as T or J nets. This fishery exploits salmon and sea trout originating from several rivers along the north east coast. Following a review of the east coast fishery by MAFF under the Salmon Act 1986, a net limitation order was passed in 1992. This provides for a phased reduction of the drift net fishery and is proceeding to date, at a mucyh faster rate than originally predicted.

Local Perspective

Map 20 shows angling activity within the Wear area.

At present there are in excess of 15 angling clubs who either own or lease rights on the River Wear and its tributaries, with two short stretches around Durham City being classed as "free" ie only a valid Agency rod licence is required to fish these stretches. The Agency owns sole fishing rights for 2.3 miles of double bank and 1.9 miles of single bank near Stanhope where the fishing is currently let to the public on a day ticket basis. Day tickets can be purchased cheaply

A free angling guide covering all the rivers and stillwaters in the North East region is available on request from the address on the inside front cover of this report.

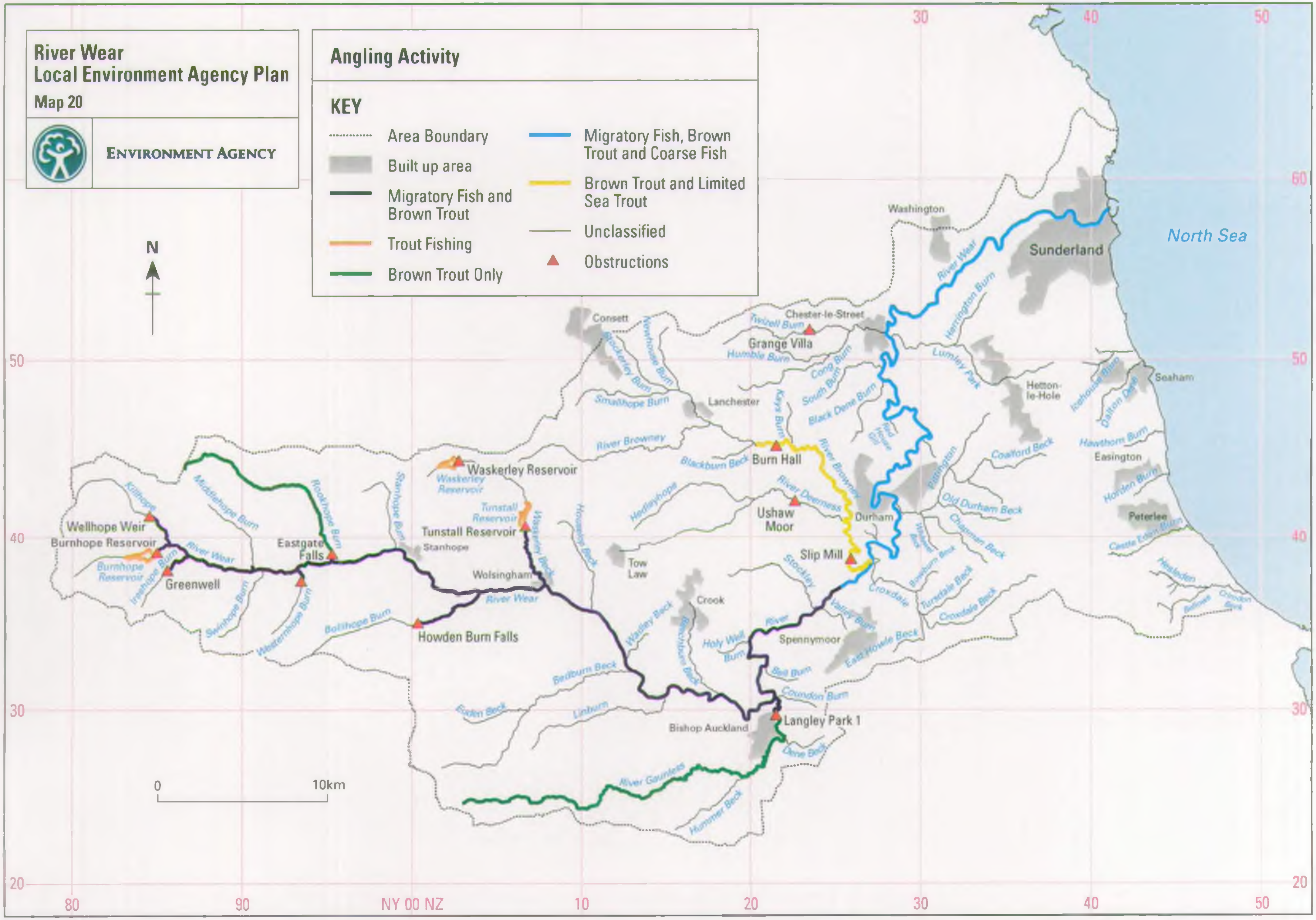
Angling for salmon and sea trout takes place over most of the main River Wear from Fatfield downstream of the tidal limit up to Wearhead. The River Wear is predominantly a sea trout river and as such is not noted for its spring run of salmon. Prevailing weather conditions have a marked effect upon the migratory salmonid run.

Trout are present throughout the system and the intensity of fishing for this species varies with the time of year and presence of migratory fish.

Coarse angling is well established in the lower reaches of the main river with some clubs devoting 90% of their efforts to coarse fish. The area around Durham and Chester le Street is particularly good for dace, chub and roach, although some clubs have expressed concern over an apparent decline of stocks on the prime beats in this area. In addition there are several important stillwater fisheries for stocked rainbow and brown trout such as Burnhope, Tunstall and Waskerley Reservoirs, and Witton Castle Lake. Others are utilised for coarse fishing to provide year round sport for the angler.

As a consequence of the numbers of migratory fish present, the river suffers a high incidence of illegal poaching activities, from organised gangs to opportunists. To counter this a team of Agency fisheries inspectors with modern communication equipment have particular responsibility for the River Wear (see Issue 21).

Net fishing in the Wear area is limited to eel fishing. On average each year licences are issued to four fishermen operating within the Tees, Wear and Tyne catchments. The licensees use nets (called fyke nets) and traps to catch eels, where permission is granted by the riparian owner. There is a potential for otters to become trapped and drown in fyke nets. There is therefore, a fisheries byelaw that requires all eel nets in the Wear area to be fitted with guards to protect otter populations.


River Wear
Local Environment Agency Plan
Map 20
Environment Agency
Angling Activity
KEY
Area Boundary
Built up area
Migratory Fish and Brown Trout
Trout Fishing
Brown Trout Only
Migratory Fish, Brown Trout and Coarse Fish
Brown Trout and Limited Sea Trout
Unclassified
Obstructions
N
0
10km
North Sea
Sunderland
Washington
River Wear
Herrington Burn
Chester-le-Street
Twizell Burn
Grange Villa
Humble Burn
Consett
Lanchester
Smallhope Burn
River Browney
Burn Hall
Blackburn Beck
Ushaw Moor
River Deerness
Durham
Slip Mill
Hetton-le-Hole
Seaham
Easington
Peterlee
Hawthorn Burn
Coalford Beck
Old Durham Beck
Croxdale
Spennymoor
Crook
Tow Law
Waskerley Reservoir
Tunstall Reservoir
Stanhope
Wolsingham
Eastgate Falls
Wellhope Weir
Burnhope Reservoir
Greenwell
Killhope
Middlehope Burn
Rookhope Burn
Bollihope Burn
Howden Burn Falls
Bishop Auckland
Langley Park 1
River Gaunless
Bedburn Beck
Linburn
Eden Beck
Dene Beck
Coundon Burn
80
90
NY 00 NZ
10
20
30
40
50
60

Salmon and Migratory Trout

A fishery for the capture of migratory salmonids has been in existence along the East Coast of England for over one hundred years. The Agency carries out enforcement under the Salmon and Freshwater Fisheries Act 1975, the Environment Act 1995, and fisheries byelaws both along the coast and six miles out to sea. This is achieved by frequent sea patrols by our fisheries patrol vessel. Working in conjunction with the vessel are land-based Fisheries Inspectors who collect and pass on information and enforce the law along the beach and inland areas.

The Agency issues net fishing licences and byelaws are to be followed by the netsmen licensed to fish for salmon and migratory trout by means of drift net and/or T-net. The byelaws include restrictions on the length of net and mesh sizes, annual weekly and nightly close times and conservation areas, called 'playgrounds', around the mouths of the rivers where drift net fishing is prohibited. Strictly controlled T-netting is, however, permitted in the Wear playground area. All licensees are required to submit catch returns detailing the numbers and weights of salmon and sea trout taken.

Net limitation orders are a further means of regulating fishing by limiting the number of licences issued. Such orders, currently made under Section 26 of the Salmon and Freshwater Fisheries Act 1975, have been in effect in the Wear area since 1964. The current order, National Rivers Authority - North East Coast (Limitation of Net Licences) Order 1992, is set to reduce the number of drift net licences issued as those currently holding such licences leave the fishery.

Research by the Agency and MAFF into the East Coast salmon and trout stocks is continuing. Data will need to be collected for use in the promotion of a new Net Limitation Order when the current Order expires in 2003.

This section relates to Issues 20 and 21.

5.15 Archaeology and Heritage

General

Heritage encompasses the elements of our history which still survive and include examples of buildings and structures which date back to the industrial revolution and archaeological remains from further back in history.

The Agency undertakes a number of works which could have an impact on archaeological and historic features. This needs to be fully taken into account, particularly where works involve ground disturbance.

Under Section 7 of the Environment Act 1995, the Agency was given the following duty:

> "to **have regard** to the desirability of protecting and conserving buildings, sites, and objects of archaeological, architectural, engineering or historic interest".

In addition the Agency is required to take into account the effect of any works on the beauty or amenity of or access to these features.

The Agency does not directly employ any qualified archaeologists and therefore rely on consultations with outside organisations, principally English Heritage, Northumberland National Park, County Councils and District Councils.

We hold a database of Scheduled Ancient Monuments (SAMs) (see Map 21) against which we can identify whether any impacts are likely. In the event of works affecting such a site, formal consent will be sought from the Department of National Heritage through English Heritage.

The county and National Park archaeologists hold information on non-statutory sites on the Sites and Monuments Register. Early consultation can assess potential impacts on these sites.

Listed building information is held by District Councils and we will seek advice on impacts on buildings and particularly weirs and bridges which are listed.

Local Perspective

The Wear area is fortunate in having a rich heritage of old buildings and monuments which gives it a distinctive local character. The Durham Cathedral is a World Heritage site.

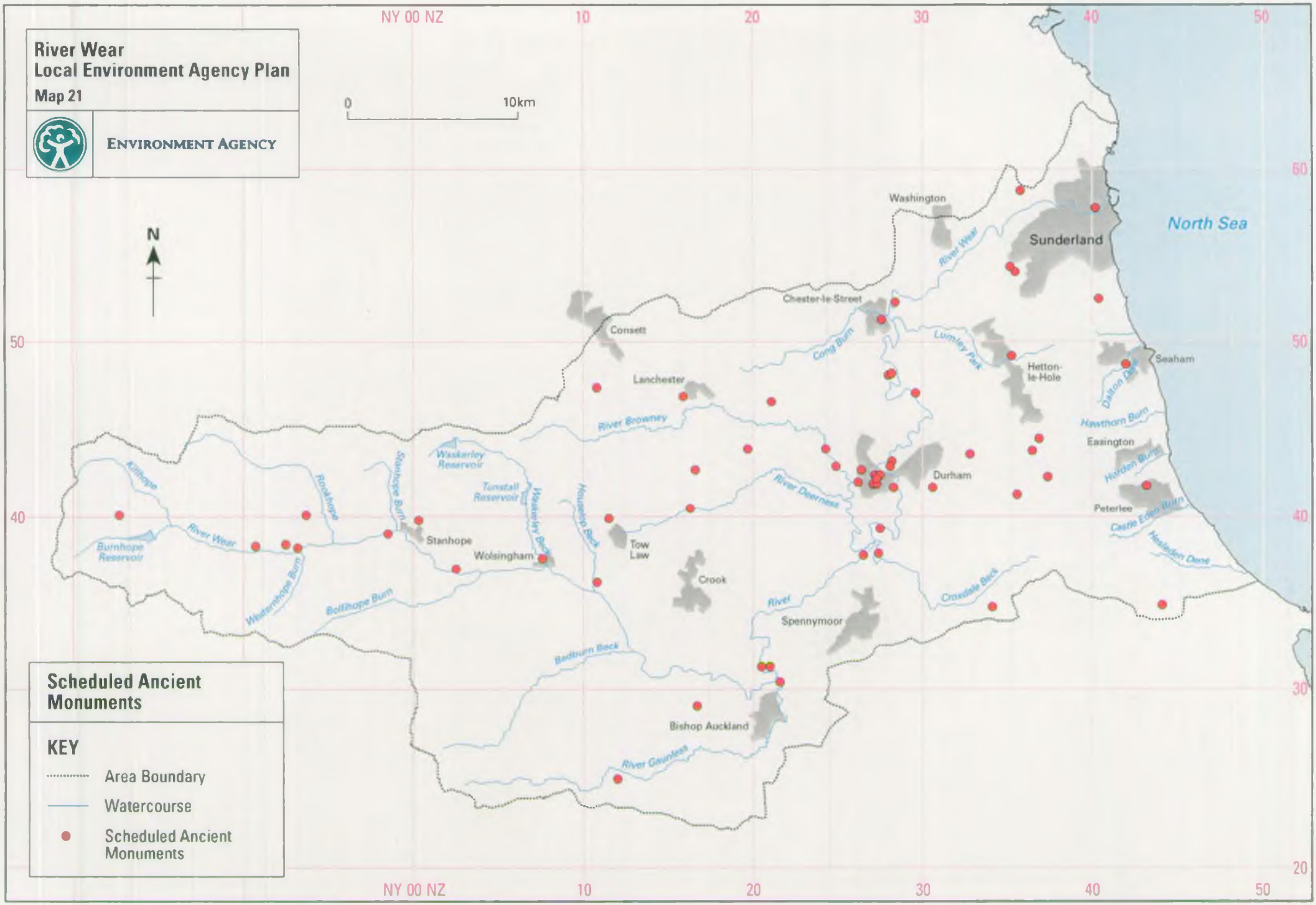
The Wear area contains approximately 25 designated Conservation Areas. These may include listed buildings, for areas or groups of buildings which themselves are not of listable quality, but are recognised due to their historic or landscape importance, or for their social or aesthetic significance.

There are approximately 1,200 listed buildings of all grades in the Wear area. These range from Anglo-Saxon to Victorian and include country houses, castles, chapels, town houses and village cottages as well as structures such as signposts, bridges and tombstones.

In addition there are numerous sites within the Wear area on the County Sites and Monuments Record.

English Heritage is currently undertaking the Monuments Protection Programme to review all known archaeological sites in England. This is likely to increase the number of SAMs within the Wear area.

There may be opportunities for the Agency to work with others, in particular English Heritage, to protect and improve sites during our work where funds allow. A good example could be working on some environmental education/interpretation projects (see Issue 25).


River Wear
Local Environment Agency Plan
Map 21
Environment Agency
0
10km
N
NY 00 NZ
10
20
30
40
50
60
North Sea
Sunderland
Washington
River Wear
Chester-le-Street
Consett
Cong Burn
Lumley Park
Hetton-le-Hole
Seaham
Dalton Dene
Hawthorn Burn
Easington
Lanchester
River Browney
Waskerley Reservoir
Stanhope Burn
Killhope
Rookhope
Tunstall Reservoir
Waskerley Beck
Hounsgill Beck
River Deerness
Durham
Harden Burn
Peterlee
Castle Eden Burn
Hesledon Dene
Burnhope Reservoir
River Wear
Stanhope
Wolsingham
Tow Law
Crook
Waterhope Burn
Bollihope Burn
Rivet
Spennymoor
Crowdale Beck
Bedburn Beck
Bishop Auckland
River Gaunless
Scheduled Ancient Monuments
KEY
Area Boundary
Watercourse
Scheduled Ancient Monuments

6 State of the Environment

6.1 Water - Quality and Quantity

Water Quality

The quality of surface water is evaluated in a number of ways against a range of statutory and non-statutory standards (detailed information on all of these standards is given in Appendix 7.2):

(a) ***Rivers Ecosystem (RE) Classification, General Quality Assessment (GQA) and NWC Estuary Classification Systems***

A scheme for the implementation of a new system for setting statutorily based Water Quality Objectives (WQOs) was approved by the Government in April 1994. This new system is use-related. The core of the WQO system, known as the Rivers Ecosystem (RE) classification, is specifically linked to the ecological 'use' of freshwaters. The definition of the RE classes in chemical terms can be equated with the broad description, with particular reference to the fish population that could be expected to be supported by the ecosystem:

Class RE1:	Water of very good quality (suitable for all fish species)
Class RE2:	Water of good quality (suitable for all fish species)
Class RE3:	Water of fair quality (suitable for high class coarse fish populations)
Class RE4:	Water of fair quality (suitable for coarse fish populations)
Class RE5:	Water of poor quality (likely to limit coarse fish populations)
No class:	Water of bad quality (in which fish are unlikely to be present)

The classification system allows for the setting aside (called derogation) of low pH values and elevated zinc and copper levels that arise from natural sources. Where such values are encountered they have been disregarded in assessing compliance with target. This derogation allows suitable discharge consent conditions to be set so as to maintain the highest water quality possible under the natural conditions.

Provisional target RE classes have been set up for the River Wear. These are currently non-statutory. Map 23 shows the stretches of river currently significantly failing their provisional RE target. These are discussed in Issue 4 in Part I.

In addition to the WQO scheme there is a system for river quality assessment known as the General Quality Assessment (GQA). Every five years a 'snapshot' of the overall state of the catchment will be produced using a variety of chemical, biological and aesthetic factors. The GQA scheme has been published by one of our predecessor authorities, the National Rivers Authority, in the Water Quality series report No 19 "*The Quality of Rivers and Canals in England and Wales (1990 to 1992)*". The chemical criteria for the GQA are given in Appendix 7.2. Map 22 shows the current GQA classes for the rivers within the Wear area.

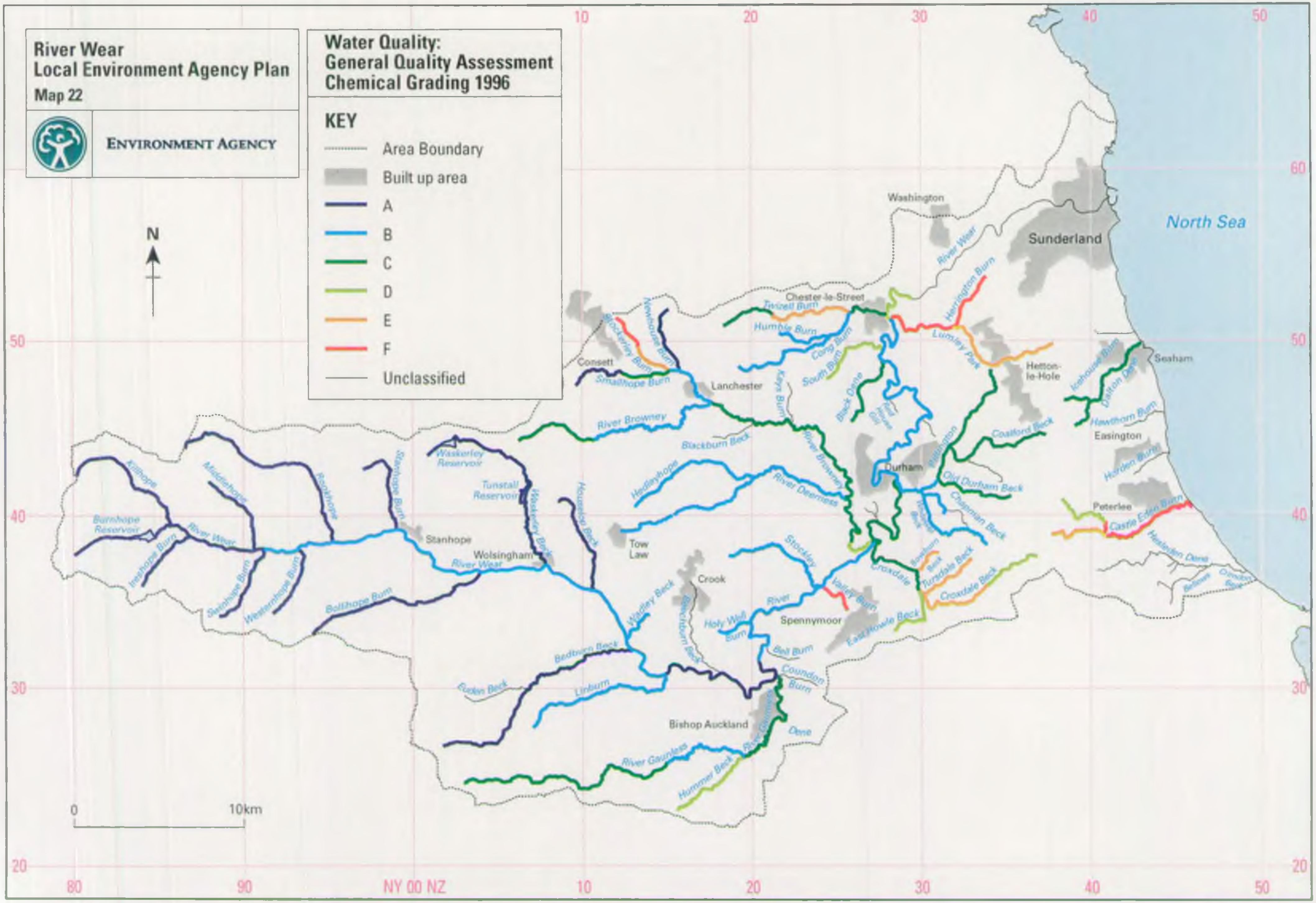
For the assessment of the water quality in estuaries, the Agency uses the NWC Estuary Classification System, which was adopted in 1980. The classification system is based on the recommendations of the Classification of Estuaries Working Party which reported to the DoE and NWC Standing Technical Advisory Committee on Water Quality. The classification aims to provide a simple assessment of the status of estuaries. The Wear estuary currently fails its NWC target. This is dealt with in Issue 5.

(b) ***European Commission (EC) Directives***

The introduction of European Commission (EC) Directives from 1976, intended to protect the water environment, has had a significant impact on water quality issues. The United Kingdom (UK) Government has adopted the Directive requirements, incorporating them into UK legislation: they are thus statutory targets. As the nominated 'competent Authority', relevant annual reports are made by the Agency to the Department of the Environment (DoE) for fresh and saline waters using results from a comprehensive sampling and analysis programme specific to each relevant Directive. Where waters do not comply with the standards set out in each Directive, the Agency is required to develop improvement plans on behalf of the DoE to ensure that the situation is remedied within a defined timescale.

Directives which apply to the catchments within the Wear area are:

- *The Dangerous Substances Directive (76/464/EEC)* which sets numerical standards (Environmental Quality Standards (EQS)) which must be achieved in all waters for identified substances which are particularly harmful to the water environment. New substances can be added to the lists by the EC as new environmental initiatives are introduced.


River Wear
Local Environment Agency Plan
Map 22
Environment Agency
Water Quality:
General Quality Assessment
Chemical Grading 1996
KEY
Area Boundary
Built up area
A
B
C
D
E
F
Unclassified
N
0
10km
North Sea
Sunderland
Washington
Chester-le-Street
Hetton-le-Hole
Seaham
Easington
Peterlee
Durham
Lanchester
Consett
Stanhope
Wolsingham
Tow Law
Crook
Spennymoor
Bishop Auckland
River Wear
Killhope
Burnhope Reservoir
Middlehope
Rookhope
Stanhope Burn
Waskerley Reservoir
Tunstall Reservoir
Waskerley Beck
Houselop Beck
Ireshope Burn
Sedlinghope Burn
Westernhope Burn
Bollihope Burn
River Browney
Smallhope Burn
Hedleyhope
Blackburn Beck
River Deerness
Stockley
Valley Burn
Croxdale
Croxdale Beck
Tursdale Beck
East Howle Beck
Wadley Beck
Holy Well Burn
Bell Burn
Coundon Burn
Dene
Bedburn Beck
Linburn
Euden Beck
River Gaunless
Hummer Beck
Twizell Burn
Humble Burn
Cong Burn
South Burn
Kays Burn
Black Dene
Lumley Park
Herrington Burn
Coalford Beck
Old Durham Beck
Chapman Beck
Icehouse Burn
Dalton Dene
Hawthorn Burn
Horden Burn
Castle Eden Burn
Hesleden Dene
10
20
30
40
50
60
80
90
NY 00 NZ

- ***The Freshwater Fisheries Directive (78/659/EEC)*** which requires that where freshwater rivers are designated as suitable for salmonid or cyprinid fish populations, then the water quality standards set out in the Directive must be met. Currently, 348km of running salmonid waters are designated (see Map 24). New designations may be made by notification to DoE.

- ***The Surface Water Abstraction Directive (75/440/EEC)*** which ensures that water abstracted from rivers or reservoirs for drinking water purposes achieves set standards, prior to treatment and distribution to public supply. Formal arrangements are in place between the water undertakers and the Agency to address non-compliance.

- ***The Bathing Water Directive (76/160/EEC)*** designates waters which are regularly used by the public for bathing purposes and must comply with microbiological standards. Where failures are recorded, improvement plans must be developed.

- ***The Urban Waste Water Treatment Directive (91/271/EEC) (to be implemented in the UK by the year 2005)*** which applies to discharges of domestic sewage and certain industrial discharges made into fresh and saline waters. Standards are set down for discharge quality and levels of treatment are specified according to the size of discharge and to the characteristics of the receiving water. The Directive also seeks to apply more stringent effluent standards to discharges into 'sensitive' waters and may require the addition of tertiary treatment to remove nutrients.

Failures to comply with EU Directives within the Wear LEAP area are highlighted in Issues 4 and 5 in Part 1.

(c) *Other National and International Initiatives*

Since 1987 the UK has adopted national and international initiatives aimed at the reduction of pollution loads which have focused mainly on discharges to the North Sea. The Paris Commission programme and the UK Red List substance initiative have estimated pollutant loads from rivers and discharges as a first step towards the identification of improvement measures.

The Agency has progressed the Paris Commission and Red List programmes, in conjunction with Directive work and other pollution prevention measures, and makes annual reports to DoE on the loads discharged. Progress has been made with load reductions in the Northumbria Area by the issue of consent conditions and IPC authorisations for appropriate discharges to achieve a 50-70% reduction over the period 1985-1995. There are six sites in the Wear area monitored for these purposes.

(d) *Biological Quality*

Water quality is also assessed biologically by sampling the invertebrate fauna that lives amongst the sediments on the river or estuary bed. The Agency has set up a programme to undertake a freshwater biological survey at least every five years. Invertebrate fauna give essential information as they:

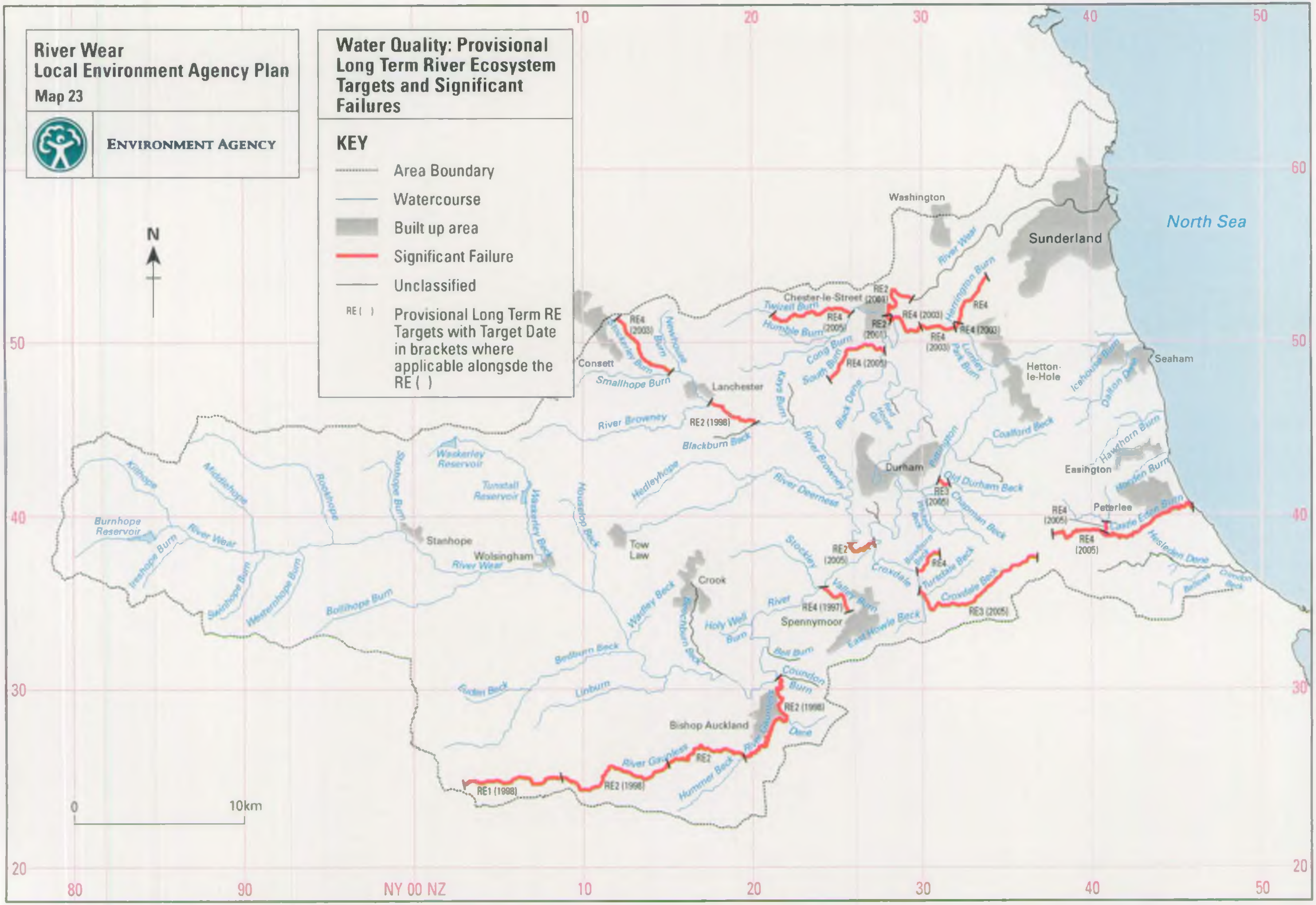
- are generally unable to move far and are affected by surrounding water quality;

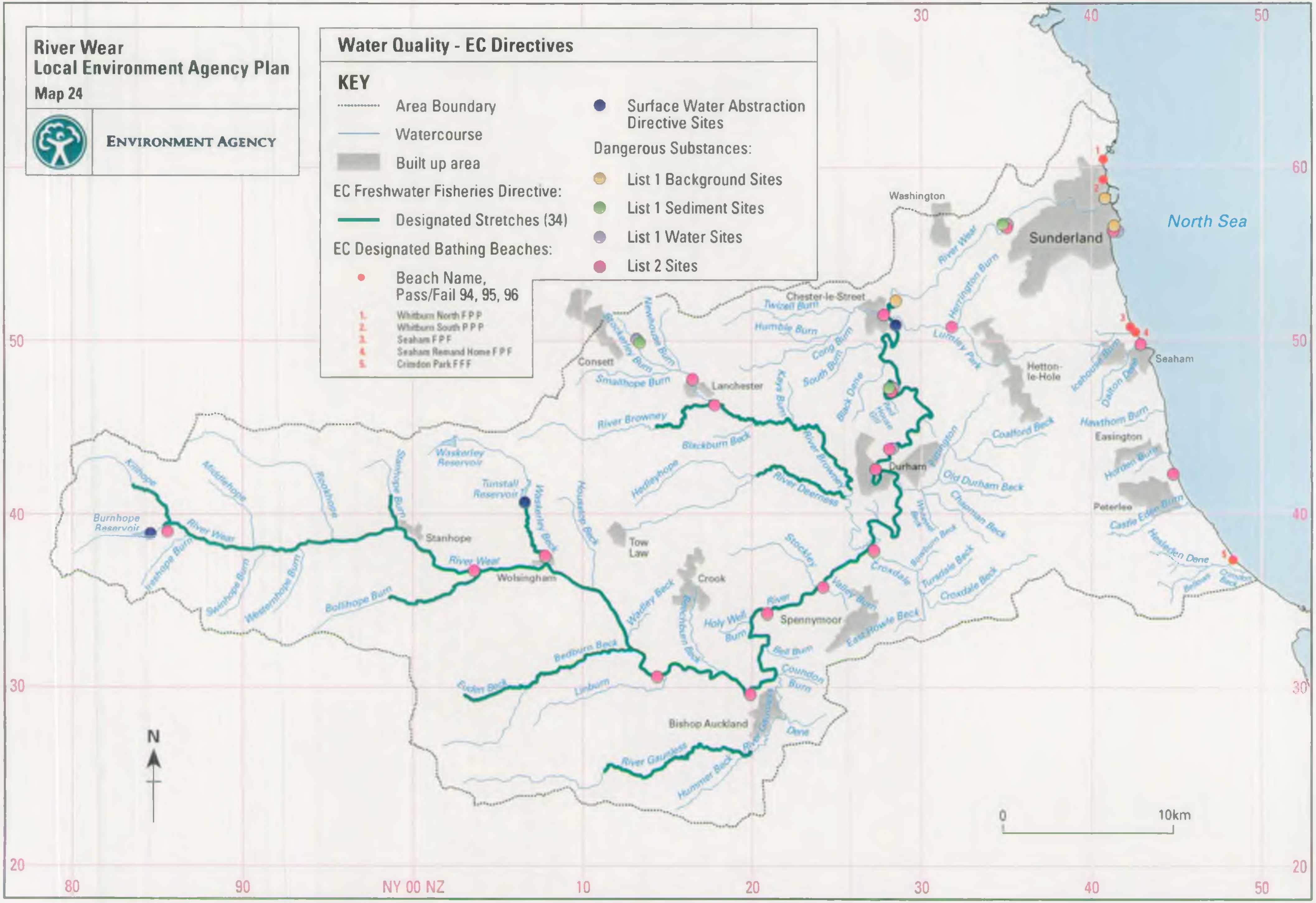
- have relatively long life spans and can reflect the situation over time;

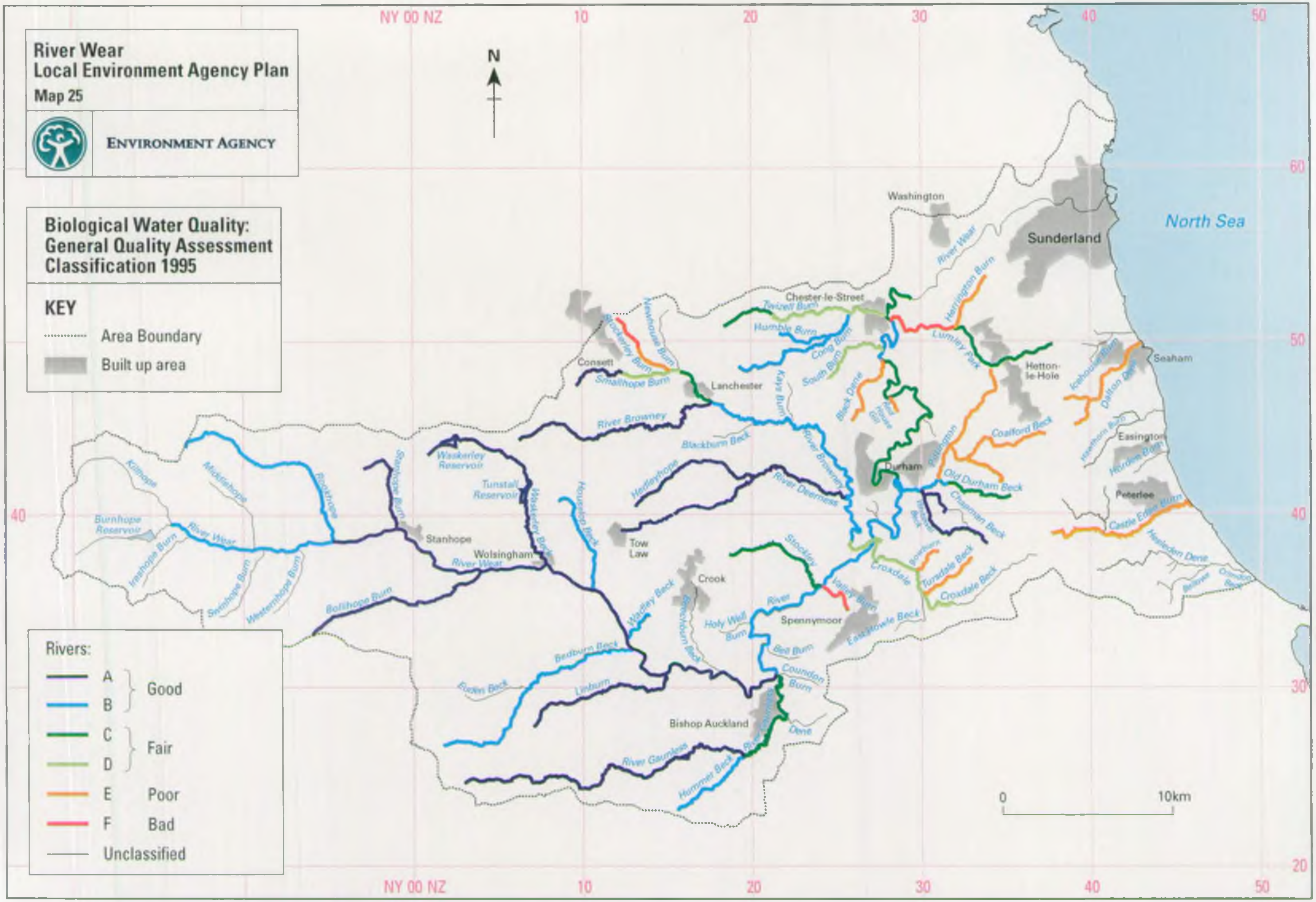
- are selectively sensitive to different types of pollution;

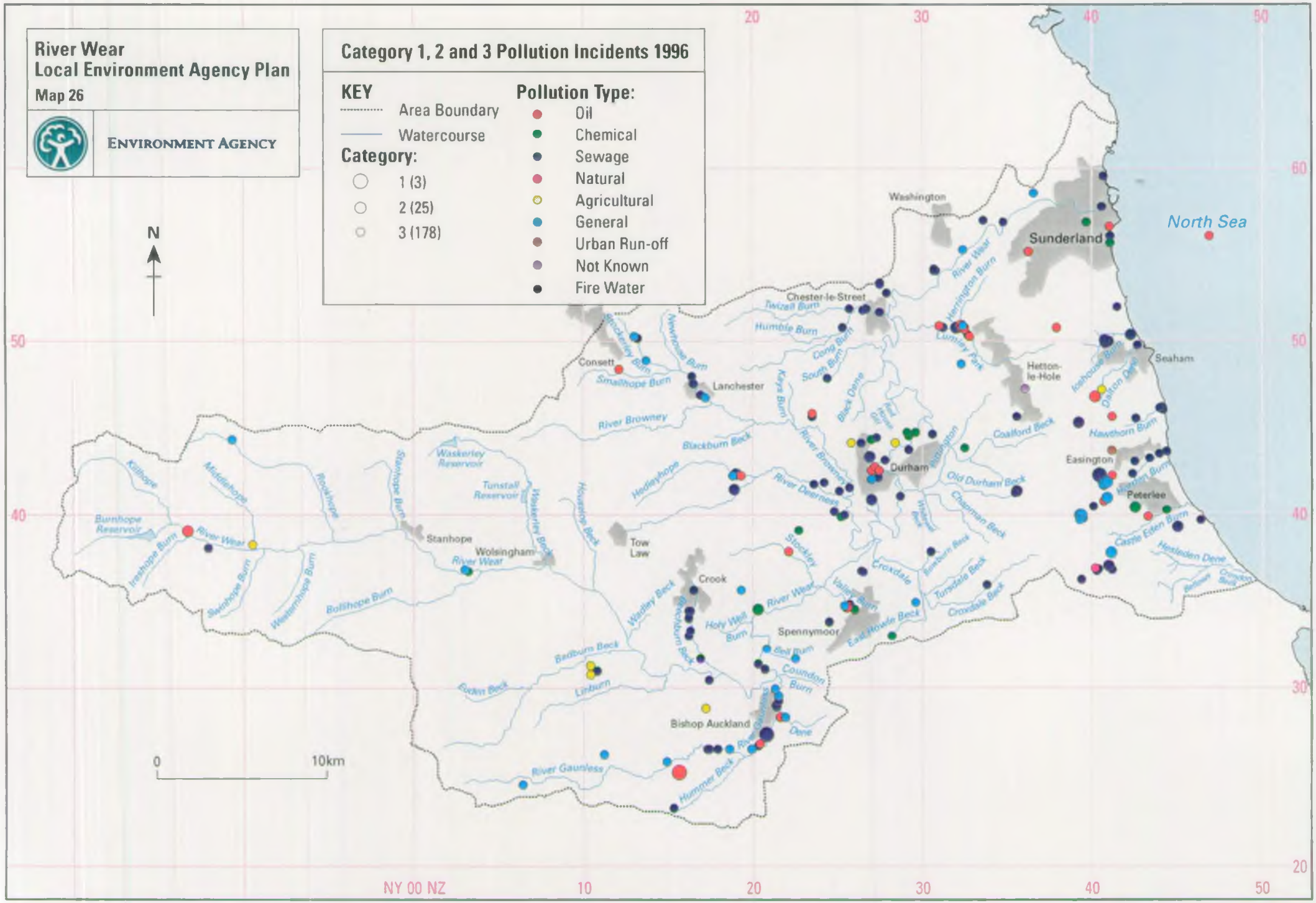
- respond to pollution that occurs intermittently or at very low levels which may not be detected by other methods.

A GQA biology scheme is used to interpret this information. Current biological GQA quality of the rivers within the Wear area is shown on Map 25. There are five classes, Grade "a" denotes excellent biological quality and Grade "f" bad biological quality. Areas of concern are highlighted in Issue 4 in Part 1.


River Wear
Local Environment Agency Plan
Map 23
Environment Agency
Water Quality: Provisional Long Term River Ecosystem Targets and Significant Failures
KEY
Area Boundary
Watercourse
Built up area
Significant Failure
Unclassified
RE ( )
Provisional Long Term RE Targets with Target Date in brackets where applicable alongsde the RE ( )
N
0
10km
North Sea
Sunderland
Washington
Chester-le-Street
Seaham
Hetton-le-Hole
Easington
Peterlee
Durham
Consett
Lanchester
Stanhope
Wolsingham
Tow Law
Crook
Spennymoor
Bishop Auckland
River Wear
Herrington Burn
Twizell Burn
Hunble Burn
Cong Burn
South Burn
Lumley Park Burn
Icehouse Burn
Dalton Dene
Coalford Beck
Hawthorn Burn
Horden Burn
Castle Eden Burn
Old Durham Beck
Chapman Beck
Croxdale Beck
Tursdale Beck
East Howle Beck
Valley Burn
Stockley
River Deerness
River Browney
Kays Burn
Black Dene
Blackburn Beck
River Browney
Hedleyhope
Smallhope Burn
Newhouse Burn
Waskerley Reservoir
Tunstall Reservoir
Waskerley Beck
Houselop Beck
Stanhope Burn
Rookhope
Middlehope
Killhope
Burnhope Reservoir
Ireshope Burn
Swinhope Burn
Westernhope Burn
Bollihope Burn
Wadley Beck
Beechburn Beck
Holy Well Burn
Bell Burn
Coundon Burn
Dene
Bedburn Beck
Linburn
Euden Beck
River Gaunless
Hummer Beck
RE1 (1998)
RE2 (1998)
RE2
RE2 (2005)
RE3 (2005)
RE4 (1997)
RE4 (2003)
RE4 (2005)
RE2 (2001)
RE4
10
20
30
40
50
60
80
90
NY 00 NZ


River Wear
Local Environment Agency Plan
Map 24
Environment Agency
Water Quality - EC Directives
KEY
Area Boundary
Watercourse
Built up area
EC Freshwater Fisheries Directive:
Designated Stretches (34)
EC Designated Bathing Beaches:
Beach Name, Pass/Fail 94, 95, 96
1. Whitburn North F P P
2. Whitburn South P P P
3. Seaham F P F
4. Seaham Remand Home F P F
5. Crimdon Park F F F
Surface Water Abstraction Directive Sites
Dangerous Substances:
List 1 Background Sites
List 1 Sediment Sites
List 1 Water Sites
List 2 Sites
North Sea
Sunderland
Washington
Chester-le-Street
Consett
Lanchester
Durham
Hetton-le-Hole
Seaham
Easington
Peterlee
Stanhope
Wolsingham
Tow Law
Crook
Spennymoor
Bishop Auckland
Burnhope Reservoir
Waskerley Reservoir
Tunstall Reservoir
River Wear
River Browney
River Deerness
River Gaunless
N
0
10km
NY 00 NZ


River Wear
Local Environment Agency Plan
Map 25
Environment Agency
Biological Water Quality:
General Quality Assessment
Classification 1995
KEY
Area Boundary
Built up area
Rivers:
A
B
Good
C
D
Fair
E
Poor
F
Bad
Unclassified
N
NY 00 NZ
10
20
30
40
50
60
0
10km
North Sea
Sunderland
Washington
Chester-le-Street
Hetton-le-Hole
Seaham
Easington
Peterlee
Durham
Lanchester
Consett
Stanhope
Wolsingham
Tow Law
Crook
Spennymoor
Bishop Auckland
River Wear
Herrington Burn
Lumley Park
Twizell Burn
Humble Burn
Cong Burn
South Burn
Smallhope Burn
Newhouse Burn
Browney Burn
Kaye Burn
River Browney
Blackburn Beck
River Deerness
Hedleyhope
Old Durham Beck
Coalford Beck
Castle Eden Burn
Hesleden Dene
Dalton Dene
Hawthorn Burn
Killhope
Middlehope
Rookhope
Burnhope Reservoir
Ireshope Burn
Swinhope Burn
Westernhope Burn
Bollihope Burn
Stanhope Burn
Waskerley Reservoir
Tunstall Reservoir
Waskerley Beck
Houselop Beck
Wadley Beck
Beechburn Beck
Holy Well Burn
Bell Burn
Coundon Burn
Dene
Bedburn Beck
Euden Beck
Linburn
River Gaunless
Hummer Beck
Stockley
Valley Burn
Croxdale
Croxdale Beck
Tursdale Beck
Chapman Beck
East Howle Beck


River Wear
Local Environment Agency Plan
Map 26
Environment Agency
Category 1, 2 and 3 Pollution Incidents 1996
KEY
Area Boundary
Watercourse
Category:
1 (3)
2 (25)
3 (178)
Pollution Type:
Oil
Chemical
Sewage
Natural
Agricultural
General
Urban Run-off
Not Known
Fire Water
N
North Sea
Washington
Sunderland
Chester-le-Street
Consett
Lanchester
Durham
Hetton-le-Hole
Seaham
Easington
Peterlee
Stanhope
Wolsingham
Tow Law
Crook
Spennymoor
Bishop Auckland
River Wear
River Browney
River Deerness
Waskerley Reservoir
Tunstall Reservoir
Burnhope Reservoir
0
10km
NY 00 NZ
10
20
30
40
50
60

Water Quantity

Specific Targets - River Flow Control

Minimum Maintained Flows (MMF) and Hands Off Flows (HOF) can be set to control river regulation and surface water abstraction. A HOF has to be maintained only when abstraction is taking place. This means that the flow can be less than the HOF if no abstraction is occurring, whereas the river must always be maintained at or above the MMF. Compensation releases may also have to be made from reservoirs.

Currently in the Wear catchment an MMF of 2 cumecs is set at the Agency's river gauging station at Chester le Street, just downstream of the NWL abstraction at Lumley (see Map 9). This prescribed flow operates with respect to the minimum instantaneous flow (not the mean daily flow) and support is usually required only for a brief period each day (typically 3 hours). Unfortunately the releases at Frosterley cannot be made with sufficient sensitivity to match these low flow periods and continuous releases have to be made to ensure that the MMF is not violated. The travel time of the release from Frosterley to Chester le Street is greater than 2 days and variable at low flows therefore releases have to be made before the flow reaches its MMF.

Water Quantity - Current Status

The River Wear is not regulated by a catchment reservoir but is supported by the Kielder transfer tunnel which discharges at Frosterley. With this support for abstractions and river flows no drought reductions to compensation flows or MMFs are anticipated.

Reservoirs in the Wear catchment are operated by NWL. Table 4 summarises the main characteristics of these reservoirs.

Name	Watercourse	Capacity (10^6m^3)	Catchment Area (km^2)	Compensation Flow (TCMD)
Burnhope	River Wear	6.45	42.78	9.1
Tunstall	Waskerley Beck	2.05	6.14	5.6
Waskerley	Waskerley Beck	2.36	19.54	0

Table 4 Details of Reservoirs in Wear Catchment

6.2 Land

Flood Defence

Flood Defence Standards of Service

As an aid to decisions on priorities for works the Agency has determined Standards of Service for flood defence based on land usage within the floodplain. Five 'land use bands' have been established, based on the presence and concentration of certain features of land use. These include housing, commercial property, agriculture, and transport networks. Such features are each allocated a financial value (based on the potential losses that would ensue if the features were subject to flooding) which allows comparison of different features on the same basis.

Each land use band has a target for the maximum flood risk to which it should be exposed. The standards are expressed as a percentage which reflects the likelihood that during any year a flood event may occur which exceeds the magnitude for which protection is available or should ideally be provided. For example, a standard of 1:50 means that, for any given year, the likelihood of a flood flow occurring which significantly affects key land use features is one in 50 years or 2% in any one year.

Standards of service land use bands and targets			
Land use band	Description of typical land use	Target standard of protection (return period)	
		Fluvial	Saline
A	Urban	1:50 - 1:100	1:100 - 1:200
B	Lower density urban	1:25 - 1:100	1:50 - 1:200
C	Isolated rural communities	1:5 - 1:50	1:10 - 1:100
D	Isolated properties/intensive farming	1:1.25 - 1:10	1:2.5 - 1:20
E	Low grade agricultural land	<1:2.5	<1:5

Table 5 Flood Defence - Standards of service land use bands and targets

A comparison of the target and actual standards of service allows improvement and maintenance works to be prioritised towards those rivers which do not meet their target standards.

Section 105 Surveys

The Agency has the responsibility under Section 105 of The Water Resources Act 1991 to carry out surveys of all main rivers and ordinary watercourses to provide information on land at risk of flooding. This is a powerful tool when used to gather information to objectively assess works and fulfill flood warning and development control requirements (see Issue 17).

Emergency Response and Levels of Service

The Agency recognises that irrespective of attempts to minimise the risk from flooding through the implementation of various policies and actions, flooding can occur and, on occasion, represents a risk to human life. We operate a 24 hour, 7 day a week flood warning system that provides a warning service for specific properties and locations that are at risk from flooding or the overtopping and/or breaching of defences. This system utilises rainfall, river level, snow and tidal data together with information supplied directly from the Met Office.

The Agency is the lead authority in disseminating warnings to the Emergency Services, local authorities and the public. This involves the use of specialist technology in addition to the cooperation and assistance of the media and local authorities.

At times of high water levels we patrol defences, operate flood defence structures, remove blockages and carry out any emergency repairs required, using the In-House Emergency Workforce. Within the limits of our resources, assistance is given to the emergency services to alleviate flooding problems by sandbagging.

In order to ensure that timely warnings are issued to the right people, we operate a system of Flood Warning Standards of Service. By defining lengths of river, or reaches, with common land use interests, those areas with a high population concentration can be treated as priority. It is our aim to provide a two hour warning of commencement of flooding, where practicable.

6.3 Air Quality

The air that surrounds us is of great concern to people since we depend on it directly to sustain good health. Air pollution can cause serious problems for those with asthma, bronchitis and other respiratory diseases. Air quality is also an indicator of environmental quality, Air pollutants can damage flora and fauna, buildings and have significant effects on soils and water.

The Agency is only one of a number of regulatory bodies concerned with air quality. Our direct responsibilities with respect to air quality are exercised through the system of Integrated Pollution Control (IPC). This requires the Agency to regulate discharges from some 2,000 of the most polluting industrial processes to not only air, but also water and land. In regulating these processes, specified as Part A processes under the Environmental Protection Act, we monitor the quality of emissions from each site.

The Nature of Air Pollution

The sources of air pollution are many and varied, but arise principally from combustion processes. They can be categorised into domestic, electricity supply, chemical/petrochemical, other industry and road transport, each source contributing different levels of the principal atmospheric pollutants. However, statistics produced by the DoE indicate road transport is the main source of air pollution with respect to black smoke, nitrogen oxides and carbon monoxide, 90% of the latter emanating from the road system.

Release of volatile organic compounds (VOCs) from the chemical/petrochemical industry and from the use of fuels in motor vehicles can give rise to air quality problems. For example, VOCs are released into the atmosphere every time a vehicle is filled with petrol. When tankers discharge fuel to petrol tanks in garages, a method has to be used to transfer vapours released directly back to the tanker.

The main atmospheric pollutants within the Wear area are as follows:

Oxides of Nitrogen (NOx)

Oxides of Nitrogen are formed by the reaction between nitrogen and oxygen in the combustion process. The main sources are vehicular emissions. The gas is usually released as nitric oxide, which in the presence of sunlight and air can be converted to the more toxic nitrogen dioxide. The gas is an irritant which can cause breathing problems and increase susceptibility to viral infection. Both gases react with water in the atmosphere to form a weak acid or acid rain which damages trees, crops and buildings. They also contribute to global warming (ie they are 'greenhouse' gases).

Sulphur Dioxide (SO_2)

Sulphur Dioxide is both a naturally occurring gas and one produced by human industrial activity. About 20% of the world's atmospheric SO_2 is produced by volcanic eruption. Of the rest, the majority is derived from the combustion of fossil fuels with a high sulphur content, ie coal and heavy oil. Consequently coal and oil burning power stations are the major source of SO_2 along with vehicle emissions. However, with less coal currently being burned in the home, the introduction of the Clean Air Act 1956, and improved technologies to reduce emissions, the release of SO_2 has declined dramatically in the last 40 years. SO_2 contributes to acid rain in a similar way as nitrogen dioxide.

Ozone

Of increasing concern is the increase in both urban and rural levels of ozone. While essential in the upper atmosphere to protect against damaging ultraviolet radiation, the presence of ozone in the lower atmosphere is particularly dangerous for people who suffer from breathing difficulties. Its concentration has increased through human activity in recent years. It is created in complex chemical reactions between oxides of nitrogen and other volatile organic compounds in sunlight. Vehicular emissions are therefore believed to be the major contributor to the ozone problem.

Particulate Matter

Sources of particulate air pollution can be both human or natural. Naturally occurring particulate matter can arise from wind erosion of rocks and soil and plant matter such as pollen. The principal human source is emissions from the combustion of fossil fuels, particularly coal and diesel fuel.

Carbon Monoxide (CO) and Carbon Dioxide (CO_2)

Carbon Monoxide is a colourless and odourless gas which, if inhaled, enters the bloodstream and disrupts the supply of oxygen to the body's tissues causing cardiovascular and respiratory problems. Its largest source is from engine exhausts, particularly cars which are decelerating or stationary.

Carbon Dioxide is also released during fossil fuel combustion. Whilst it is not directly harmful to human health, it is a major greenhouse gas. An average car emits approximately 4 tonnes of CO_2 over an average year's mileage (12,000 miles).

Lead

Lead compounds are released to the atmosphere in minute particles during the combustion of leaded petrol. During the 1970s and early 1980s research showed that its presence in the air could result in retarded learning or even brain damage, especially amongst children. Consequently, since the mid 1980s, leaded petrol has steadily been withdrawn and unleaded introduced. The use of this alternative has been encourage by associated financial incentives and has resulted in a dramatic drop in atmospheric urban levels in the last 10 years. This demonstrates the type of action which can be taken to reduce harmful atmospheric pollutants.

Other Influences on Air Quality

The concentration of an air pollutant in the atmosphere determines the severity of its effects on the people and environment within any area. Ground level concentrations of pollutants are determined by the degree of dispersion which is, in turn, largely a function of the prevailing meteorological conditions at a given time.

Air Quality - Targets

Recent legislation and Government policy guidance reflects the increasing concern that is felt regarding the quality of the air that we breathe and the pollutants that we release into it.

The Government response has centred around two themes:

- Firstly, the development of a national strategy that will set overall objectives for the levels of specified pollutants, based on cost and benefit (see below).

- Secondly, where any of the objectives prescribed are not being achieved or are not likely to be achieved by the year 2005 within any part of the authority's area, the local authority concerned has to designate that part of its area as an Air Quality Management Area (AQMA). A plan covering the designated area then has to be prepared setting out how the authority intends to exercise its powers in relation to the designated area to achieve the prescribed standards or objectives. Some local authority areas have been set up as pilots to review the DoE Guidance, consider and anticipate problems in achieving the objectives; one such area is the Tyne and Wear Authorities' area. The Agency is a statutory consultee on these plans however, we are proposing taking a active role in assisting local authorities with the management of air quality (see Issue 2 in Part 1).

UK National Air Quality Strategy

The UK National Air Quality strategy sets out the Government's proposed objectives for air quality. A summary of these standards is set out below:

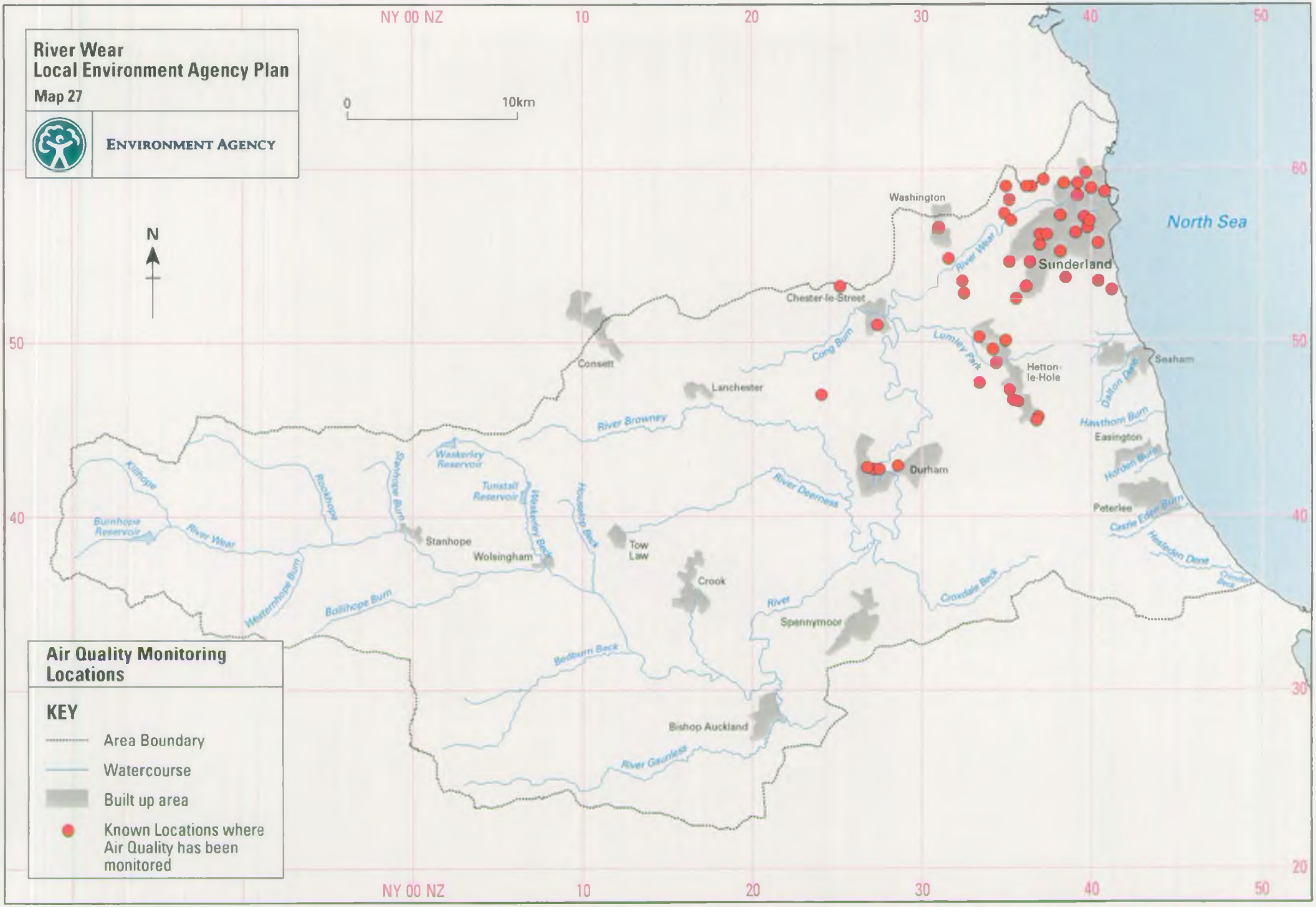
Pollutant	Standard		Objective to be achieved by 2005
	concentration	measured by	
Benzene	5ppb	running annual mean	5ppb
1,3 Butadiene	1ppb	running annual mean	1ppb
Carbon monoxide	10ppm	running 8-hour mean	10ppm
Lead	0.5 $\mu g/m^3$	annual mean	0.5 $\mu g/m^3$
Nitrogen dioxide	150 ppb	1 hour mean	150 ppb, hourly mean*
	21 ppb	annual mean	50 ppb, annual mean*
Ozone	50 ppb	running 8-hour mean	50 ppb, measured as the 97th percentile*
Fine particles (PM_{10})	50 $\mu g/m^3$	running 24-hour mean	50 $\mu g/m^3$ measured as the 99th percentile*
Sulphur dioxide	100 ppb	15 minute mean	100 ppb measured as the 99.9th percentile*

ppm = parts per million; ppb = parts per billion; $\mu g/m^3$ = micrograms per cubic metre
* = these objective are to be regarded as provisional

Table 6 UK Government's proposed objectives for air quality

Air Quality - Current Status

Currently air quality within the Wear LEAP area is not extensively monitored. Some air quality information has been collected by the local authorities at the sites shown on Map 27, however, the data are not continuous. The development of Local Air Quality Management Plans is discussed in Issue 2 of Part 1.


River Wear
Local Environment Agency Plan
Map 27
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Sunderland
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Cong Burn
Lumley Park
Hetton-le-Hole
Seaham
Dalton Dene
Hawthorn Burn
Easington
Horden Burn
Peterlee
Castle Eden Burn
Hesledon Dene
Consett
Lanchester
River Browney
Durham
River Deerness
Waskerley Reservoir
Tunstall Reservoir
Waskerley Beck
Smiddyshaw Burn
Killhope
Rookhope
Burnhope Reservoir
River Wear
Stanhope
Wolsingham
Housedog Beck
Tow Law
Crook
Hetterhope Burn
Ballhope Burn
River
Spennymoor
Crossdale Beck
Bedburn Beck
Bishop Auckland
River Gaunless
Air Quality Monitoring Locations
KEY
Area Boundary
Watercourse
Built up area
Known Locations where Air Quality has been monitored

6.4 Biodiversity

Biodiversity: The UK Action Plan

On behalf of the UK Government, the Prime Minister signed the "*Convention on Biological Diversity*" at the Earth Summit in Rio de Janeiro in 1992, together with over 150 Heads of State or governments. This represented a commitment to conserving and maintaining the variety of life on earth and recognised that each country had a prime responsibility to conserve and enhance biodiversity within its own jurisdiction. It was agreed that each country would draw up national plans and programmes.

Two years after the Rio summit, the UK Government published "*Biodiversity: The UK Action Plan (1994)*", a document which set out the UK's commitment "*to conserve and enhance biological diversity within the UK, and to contribute to the conservation of global biodiversity through all appropriate mechanisms*".

The 1994 UK Action Plan proposed the setting up of a Biodiversity Steering Group, consisting of central and local government representatives together with conservation and voluntary agencies, to prepare action plans for the nation's species and habitats. At the end of 1995, the steering group presented to Government "*Biodiversity: The UK Steering Group Report*" in two volumes. With over 400 pages of information, this provides a much needed insight into the status of our plants, animals and habitats, reasons for their decline and include s targets for their future conservation. In particular, the report contains national action plans (some of these with costs) to maintain or improve the quality of species and habitats, proposals for data collection and raising public awareness and guidance on involving local people in the biodiversity component of the Local Agenda 21 process.

The Implementation of the Initiative at a Local Level

The only way that the UK Biodiversity Action Plan will be implemented successfully is if national targets and action plans are translated into effective action at a local level. The Biodiversity Steering Group report recommends the production of Local Biodiversity Action Plans which are seen as a primary way of achieving such actions. Their main functions are to ensure that national targets for species and habitats are attained in a consistent manner throughout the UK, and to focus resources on the issues by means of local partnerships or consortiums between central government, local government, voluntary and statutory conservation organisations, local record centres, private landowners, and local communities. In England, these partnerships should ideally be developed at the county or district level of local authorities.

Local Biodiversity Action Plans (BAP)

In the Wear LEAP area, local BAPs are currently being developed or are proposed for County Durham and Sunderland.

These plans will detail the levels of nature conservation resource present in each district, agree targets for habitats and species which are appropriate and actions which will be needed to achieve a sustainable level of the nature conservation resource. The BAPs will make nature conservation data more objective and put it onto a par with other information used in the strategic planning and decision-making process such as, population statistics, housing needs, traffic predictions etc. It is anticipated that there will be gaps and weaknesses in the information available, especially relating to species, but the BAPs will highlight these deficiencies and make recommendations for supplementing the data as appropriate.

The Environment Agency's Role

Species known to be present in the Wear LEAP area for which the Agency is the contact point or lead agency are:

- Otter;
- Water Vole;
- Native Crayfish.

An important first step in the conservation of these species will be the identification of actions based on good information regarding status. Information related to the distribution and status of the otter is reasonably complete. Crayfish distribution throughout the catchment is known, though information on population size is less comprehensive.

The Agency seeks, through its day-to-day duties and responsibilities, to protect, enhance and create habitats of value to ecological communities.

Issues 22 in Part 1 of this document deals with how the Agency plans to undertake its work in this area.

Appendices

7 Appendices

7.1 Statutory Committees/Area Environment Group

The North East Region of the Environment Agency is served by three* Committees:

- Regional Environment Protection Advisory Committee (REPAC).
- Regional Flood Defence Committee (RFDC):
  **[There are two Regional Flood Defence Committees in the North East Region:*
- *Northumbria RFDC (which covers the Northumbria Area and the Tees Catchment).*
- *Yorkshire RFDC (which covers the southern half of the North East Region including North, South, East and West Yorkshire)].*
- Regional Fisheries Advisory Committee (RFAC).

REPAC members are drawn from specific interest groups outlined in a Membership Scheme approved by the Secretary of State for the Environment. These groups are:

- Regulated Bodies (including industry and water companies);
- Land/Air;
- Environment;
- Local Authorities;
- Other Environment Agency Statutory Committees (RFDC and RFAC).

The Chairman is appointed by the Secretary of State and the Members appointed by the Regional General Manager.

RFDC Members are appointed by local authorities, Ministry of Agriculture, Fisheries and Food and the Environment Agency in accordance with a Constitution Order approved by the Ministry. The Chairman is appointed by the Minister. The RFDC has executive powers with regard to the discharge of its flood defence duties.

RFAC Members are drawn from anglers, angling organisations, commercial netsmen, riparian owners, conservation, recreation and navigation groups and other Environment Agency Committees (REPAC and RFDC). The Chairman is appointed by the Minister of Agriculture, Fisheries and Food and the Members appointed by the Regional General Manager.

Area Environment Groups

The Northumbria Area is served by its own Area Environment Group (AEG). Membership consists of local people who live and work in the area and who represent a wide spectrum of interests. These include local authorities, industry, agriculture, conservation, amenity and recreational interests and riparian owners (see Section 1.2). The Group will advise the Agency on LEAPs, the delivery of local services and act as a link between the local community, the Agency and its statutory committees.

7.2 Environmental Standards

There is a great deal of legislation that determines the way the Agency operates and carry out its enforcement duties. The Environment Act 1995 provides some harmonisation of powers, but the Agency also relies on existing legislation, including the Control of Pollution Act (1974), the Control of Pollution Act (Amendment) Act (1989), the Environmental Protection Act (1990), the Radioactive Substances Act (1993), the Salmon and Freshwater Fisheries Act (1975), the Water Resources Act (1991), and the Land Drainage Act (1991).

The Agency is the competent Authority for over 25 European Union environmental Directives whilst a further 70 Directives affect its policies and activities. These include the Quality of Bathing Waters, Dangerous Substances, Industrial Plant Emissions, Waste Management Framework, Quality of Water to Protect Freshwater Fisheries, and the Urban Waste Water Treatment Directives.

Operational Standards are the technical, scientific and engineering procedures which are necessary to put legislation and policy into practice. These take many forms, including policy statements, procedural manuals, and suite of quantitative output and performance measures that the Agency monitors quarterly or annually. Details of the Agency's operational standards are published in technical handbooks, research & development reports, and information leaflets. Further details are available from local offices.

7.2.1 Public Registers and Access to Environmental Information

We maintain several public registers which can be inspected at most Environment Agency offices. Information is usually provided free of charge, but for large and complex requests charges may be made for staff time and materials. There are also standard charges for some specific searches. Confidential information, incomplete or draft reports, and information where disclosure may lead to environmental damage are generally not available.

Further details about public registers and the types of information held by the Agency are available in our leaflet *A Guide to Information Available to the Public.* Copies are available at our Newcastle office, or you can telephone and we will send one to you in the post.

At present, offices may have information relevant only to their local area; please call before you visit to ensure that the information you want is available at your local office. Our staff will be happy to help you with any queries you may have and if you call before you visit we will ensure that they are on hand to help you with your query.

Some environmental details and information regarding the public registers are available on the Internet on http://www.environment-agency.gov.uk

7.2.2 The RQO Classification

The water quality targets that we use in all rivers are known as River Quality Objectives (RQOs). RQOs are used for managing water quality and are based on the River Ecosystem (RE) classification scheme. We eventually plan to introduce Statutory Water Quality Objectives to supersede these River Quality Objectives.

These classes reflect the chemical quality needed by different types of river ecosystem including the types of fishery they can support. We set RQOs based on the need to protect current water quality and future use.

Use Class	DO % sat 10%ile	BOD (ATU) mg/l 90%ile	Total Ammonia mg N/l 90%ile	Un-ionised Ammonia mg N/l 95%ile	pH 5%ile & 95%ile	Hardness mg/l $CaCO_3$	Dissolved copper µg/l 95%ile	Total zinc µg/l 95%ile	Class Description
RE1	80	2.5	0.25	0.021	6.0-9.0	<10 >10 and <50 >50 and <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	6.0-9.0	<10 >10 and <50 >50 and <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	6.0-9.0	<10 >10 and <50 >50 and <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	---	6.0-9.0	<10 >10 and <50 >50 and <100 >100	5 22 40 112	300 700 1000 2000	Water of fair quality suitable for coarse fish populations
RE5	20	15	9	---	---	---			Water of poor quality which is likely to limit coarse fish populations

Standards for the River Ecosystem Use Classes

7.2.3 Bathing Waters Directive

The EC Directive *concerning the quality of bathing water* (76/160/EEC) seeks to protect public health and the amenity value of popular bathing waters by reducing pollution. The Directive contains standards for 19 microbiological, physical and chemical parameters to assess bathing water quality. Compliance is assessed mainly by standards for bacteria (total and faecal coliforms) found in sewage.

The Agency is responsible for monitoring the quality of identified, popular bathing waters and providing the results to DoE who decides whether the standards in the Directive have been met. Where identified bathing waters fail to meet the Directive, we are responsible for identifying sources of pollution that are causing failures, and making sure that improvements are made.

Parameter	Units	Value		Status	
		I	G	I	G
Total coliforms	no/100ml	10,000	500	95% of samples	80% of samples
Faecal coliforms	no/100ml	2,000	100	95% of samples	80% of samples
Faecal streptococci	no/100ml	---	100	---	95% of samples
Salmonella	no/l	0	---	95% of samples	---
Enterovirus	PFU/10l	0	---	95% of samples	---

Notes: PFU = Plaque Forming Units I = Imperative or Mandatory standard G = Guideline standard

There is currently no imperative standard for faecal streptococci, however it has been proposed that the Directive should be revised and should include an imperative standard for faecal streptococci of 400/100ml.

Microbiological Standards

Parameter	Analysis Method	Description/Standard
Colour	Visual inspection	No abnormal change
Mineral oils	Visual inspection	No visible surface film
	Olfactory inspection	No odour
	mg/l after extraction and weighing dried residue	≤ 0.3
Surface-active substances (methoylene-blue active)	Visual inspection	No lasting foam
	mg/l as lauryl sulphate	≤ 0.3
Phenols	Olfactory inspection	No specific odour
	mg/l	≤ 0.05
Transparency	m	1
Tarry residues, solid floating material, effluent slicks	Visual inspection	Absent

Aesthetic Criteria

7.2.4 Surface Water Abstraction Directive

The EC Directive *concerning the quality required of surface water intended for the abstraction of drinking water in the Member states* (75/440/EEC), protects the quality of surface water used for public supply. This Directive ensures that water abstracted for public supply meets certain quality standards and is given adequate treatment before entering public water supplies.

The Directive sets out imperative standards that must be achieved, and guideline standards that Member States should aim to achieve, for water for public supply which is to be given different levels of treatment.

The Agency is responsible for monitoring the quality of designated surface water abstractions and reporting the results to the DoE who decide whether the standards in the Directive have been met. Where standards are not met, we are responsible for identifying sources of pollution and making sure that improvements are made.

Definition of the Standard Methods of Treatment for Transforming Surface Water of Categories A1, A2 and A3 into Drinking Water	
Category A1	Simple physical treatment and disinfection, eg rapid filtration and disinfection
Category A2	Normal physical treatment, chemical treatment and disinfection, eg pre-chlorination, coagulation, flocculation, decantation, filtration, disinfection (final chlorination)
Category A3	Intensive physical and chemical treatment, extended treatment and disinfection, eg chlorination to break-point, coagulation, flocculation, decantation, filtration, absorption (activated carbon), disinfection (ozone, final chlorination)

Characteristics of Surface Waters Intended for the Abstraction of Drinking Water			Categories					
Parameters			A1		A2		A3	
			G	I	G	I	G	I
1	pH		6.5 to 8.5	---	5.5 to 9	---	5.5 to 9	---
2	Coloration (after simple filtration)	mg/l Pt scale	10	20 (0)	50	100 (0)	50	200 (0)
3	Total suspended solids	mg/l SS	25	---	---	---	---	---
4	Temperature	°C	22	25 (0)	22	25 (0)	22	25 (0)
5	Conductivity	$\mu s/cm^{-1}$ at 20°C	1000	---	1000	---	1000	---
6	Odour	(dilution factor at 5°C)	3	---	10	---	20	---
7	Nitrates	mg/l NO_2	25	50 (0)	---	50 (0)	---	50 (0)
8	Fluorides	mg/l F	0.7 to 1.0	1.5	0.7 to 1.7	---	0.7 to 1.7	---
9	Total extractable organic chlorine	mg/l Cl	---	---	---	---	---	---
10	Dissolved Iron	mg/l Fe	0.1	0.3	1	2	1	---
11	Manganese	mg/l Mn	0.05	---	0.1	---	1	---
12	Copper	mg/l Cu	0.02	0.05 (0)	0.05	---	1	---
13	Zinc	mg/l Zn	0.5	3	1	5	1	5
14	Boron	mg/l B	1	---	1	---	1	---
15	Beryllium	mg/l Be	---	---	---	---	---	---
16	Cobalt	mg/l Co	---	---	---	---	---	---
17	Nickel	mg/l Ni	---	---	---	---	---	---
18	Vanadium	mg/l V	---	---	---	---	---	---
19	Arsenic	mg/l As	0.01	0.05	---	0.05	0.05	0.1
20	Cadmium	mg/l Cd	0.001	0.005	0.001	0.005	0.001	0.005
21	Total Chromium	mg/l Cr	---	0.05	---	0.05	---	0.05
22	Lead	mg/l Pb	---	0.05	---	0.05	---	0.05
23	Selenium	mg/l Se	---	0.01	---	0.01	---	0.01
24	Mercury	mg/l Hg	0.0005	0.001	0.0005	0.001	0.0005	0.001
25	Barium	mg/l Ba	---	0.1	---	1	---	1
26	Cyanide	mg/l Cn	---	0.05	---	0.05	---	0.05
27	Sulphates	mg/l So_4	150	250	150	250 (0)	150	250 (0)
28	Chlorides	mg/l Cl	200	---	200	---	200	---
29	Surfactants (reacting with methyl blue)	mg/l (laurylsulphate)	0.2	---	0.2	---	0.5	---
30	Phosphates	mg/l P_2O_5	0.4	---	0.7	---	0.7	---
31	Phenols (phenol index) paranitraniline 4 aminoantipyrine	mg/l C_6H_5OH	---	0.001	0.001	0.005	0.01	0.1

Characteristics of Surface Waters Intended for the Abstraction of Drinking Water			Categories					
Parameters			A1		A2		A3	
			G	I	G	I	G	I
32	Dissolved or emulsified hydrocarbons (after extraction by petroleum ether)	mg/l	---	0.05	---	0.2	0.5	1
33	Polycyclic aromatic hydrocarbons	mg/l	---	0.0002	---	0.0002	---	0.001
34	Total pesticides (parathion, BHC, dieldrin)	mg/l	---	0.001	---	0.0025	---	0.005
35	Chemical oxygen demand (COD)	mg/l O_2	---	---	---	---	30	---
36	Dissolved oxygen saturation rate	% O_2	> 70	---	>50	---	> 30	---
37	Biochemical oxygen demand (BOD_5) (at 20°C with nitrification)	mg/l O_2	3	---	5	---	< 7	---
38	Nitrogen by Kjeldahl method (except NO_3)	mg/l N	1	---	2	---	3	---
39	Ammonia	mg/l NH_4	0.05	---	1	1.5	2	4 (0)
40	Substances extractable with chloroform	mg/l SEC	0.1	---	0.2	---	0.5	---
41	Total organic carbon	mg/l C	---	---	---	---	---	---
42	Residual organic carbon after flocculation and membrane filtrations (5 μ) TOC	mg/l C	---	---	---	---	---	---
43	Total coliforms 37°C	/100ml	50	---	5,000	---	50,000	---
44	Faecal coliforms	/100ml	20	---	2,000	---	20,000	---
45	Faecal streptococci	/100ml	20	---	1,000	---	10,000	---
46	Salmonella		Not present in 5,000ml	---	Not present in 1,000ml	---	---	---

I = mandatory
G = guide
(0) = exceptional climatic or geographical conditions

7.2.5 EC Dangerous Substances Directive

The EC Dangerous Substances Directive *on pollution caused by certain substances discharged in the aquatic environment of the community* (76/464/EEC) protects the water environment by controlling discharges to rivers, estuaries and coastal waters.

This Directive describes two lists of compounds. List I contains substances regarded as particularly dangerous as they are toxic, persist in the environment and bioaccumulate. Discharges containing List I substances must be controlled by Environmental Quality Standards (EQSs) issued through Daughter Directives. List II contains substances which are considered to be less dangerous but can still have a harmful effect on the water environment. Discharges of List II substances are controlled by EQSs set by the individual Member States.

The Agency is responsible for authorising, limiting and monitoring dangerous substances in discharges. We are also responsible for monitoring the quality of waters receiving discharges which contain dangerous substances and reporting the results to the DoE who decide whether the standards in the Directive have been met. Where the requirements of this Directive are not met, we are responsible for identifying sources of pollution and making sure that improvements are made.

Parameter	Units	Value	Status [1]
Mercury	µg Hg/l	1.0	AA, T
Cadmium [2]	µg Cd/l	5.0 1.0	AA, T AA, T, B [4]
Hexachlorocyclohexane (HCH) [2]	µg/l	0.1 0.05	AA, T AA, T, B [4]
Tetrachloromethane (CTC)	µg/l	12	AA, T
DDT (para-para DDT isomer) [2]	µg/l	0.01	AA, T
Total DDT [2]	µg/l	0.025	AA, T
Pentachlorophenol (PCP) [2]	µg/l	2	AA, T
'The Drins' (from 1 Jan 1989)	µg/l	0.03 [3]	AA, T
Aldrin (from 1 Jan 1994)	µg/l	0.01	AA, T
Dieldrin (from 1 Jan 1994)	µg/l	0.01	AA, T
Endrin (from 1 Jan 1994)	µg/l	0.005	AA, T
Isodrin (from 1 Jan 1994)	µg/l	0.005	AA, T
Hexachlorobenzene (HCB) [2]	µg/l	0.03	AA, T
Hexachlorobutadience (HCBD) [2]	µg/l	0.1	AA, T
Chloroform	µg/l	12	AA, T
1, 2-dichloroethane	µg/l	10	AA, T
Trichloroethylene	µg/l	10	AA, T
Perchloroethylene	µg/l	10	AA, T
Trichlorobenzene (TCB)	µg/l	0.4	AA, T

EQSs for List I Substances (Inland Waters)

Parameter	Units	Value	Status [1]
Mercury [2]	µg Hg/l	0.3	AA, D
Cadmium [2]	µg Cd/l	2.5	AA, D
Hexachlorocyclohexane (HCH) [2]	µg/l	0.02	AA, T
Tetrachloromethane (CTC)	µg/l	12	AA
DDT (para-para DDT isomer) [2]	µg/l	0.01	AA
Total DDT [2]	µg/l	0.025	AA
Pentachlorophenol (PCP) [2]	µg/l	2	AA
'The Drins' (from 1 Jan 1989)	µg/l	0.03 [3]	AA, T
Aldrin (from 1 Jan 1994)	µg/l	0.01	AA
Dieldrin (from 1 Jan 1994)	µg/l	0.01	AA
Endrin (from 1 Jan 1994)	µg/l	0.005	AA
Isodrin (from 1 Jan 1994)	µg/l	0.005	AA
Hexachlorobenzene (HCB) [2]	µg/l	0.03	AA

Parameter	Units	Value	Status [1]
Hexachlorobutadiene (HCBD) [2]	µg/l	0.1	AA
Chloroform	µg/l	12	AA
1, 2-dichloroethane	µg/l	10	AA
Trichloroethylene	µg/l	10	AA
Perchloroethylene	µg/l	10	AA
Trichlorobenzene (TCB)	µg/l	0.4	AA

Notes:
1. AA = Annual Average T = Total B = Background Monitoring
2. A 'standstill provision exists for concentrations in sediments and/or shellfirsh and or/fish
3. Maximum of 0.005 for Endrin
4. B = Background Monitoring: only applies at designated end of catchment sites.

EQSs for List I Substances (Tidal Waters)

Proposals have been published for the following List I substances but these have no been adopted to date:

trifluralin, endosulphan, simazine, triorganotin compounds (tributyltin oxide, triphenyltin acetate, triphenyltin oxide, triphenyltin hydroxide), atrazine, organohposphorus substances (azinphos-methyl, azinphos-ethyl, fenitrothion, fenthion, malathion, parathion and parathion-methyl, dichlorvos).

Parameter	Units	Value [3]		Hardness (mg $CaCO_3$/1)	Status [2]
		A Std	B Std		
Lead	µg Pb/l	4 10 10 20	50 125 125 250	0 to 50 50 to 100 100 to 150 150 to > 250	AA, D
Chromium	µg Cr/l	5 10 20 20	150 175 200 200	0 to 50 50 to 100 100 to 150 150 to 200	AA, D
Zinc	µg Zn/l	8 50 75 75 75 125	75 175 250 250 250 500	0 to 50 50 to 100 100 to 150 150 to 200 200 to 250 >250	AA, T
Copper	µg Cu/l	1 6 10 28	1 6 10 28	0 to 50 50 to 100 100 to 150 150 to > 200	AA, D
Nickel	µg Ni/l	50 100 150 200	50 100 150 200	0 to 50 50 to 100 100 to 200 200 to > 250	AA, D
Arsenic	µg As/l	50		All	AA, D
Boron	µg B/l	2000		All	AA, T
Iron	µg Fe/l	1000		All	AA, D
pH	pH values	6 to 9		All	95% of samples
Vanadium	µg V/i	20 60	20 60	0 to 200 200 +	AA, T
Tributyltin	µg/l	0.02		All	M, T
Triphenyltin	µg/l	0.02		All	M, T

Parameter	Units	Value [3]		Hardness (mg $CaCO_3$/1)	Status [2]
		A Std	B Std		
Polychlorochlormethyl-sulphonamidiphenyl (PCSDs)	µg/l	0.05		All	T, 95% of samples
Sulcofuron	µg/l	25		All	T, 95% of
Flucofuron	µg/l	1.0		All	T, 95% of
Permethrin	µg/l	0.01		All	T, 95% of
Cyfluthrin	µg/l	0.001		All	T, 95% of

EQSs for List II Substances (Inland Waters)

Parameter	Units	Value [1]	Status [2]
Lead	µg Pb/l	25	AA, D
Chromium	µg Cr/l	15	AA, D
Zinc	µg Zn/l	40	AA, D
Copper	µg Cu/l	5	AA, D
Nickel	µg Ni/l	30	AA, D
Arsenic	µg As/l	25	AA, D
Boron	µg B/l	7000	AA, D
Iron	µg Fe/l	1000	AA, D
pH	pH values	6 to 8.5 [3]	95% of samples
Vanadium	µg V/l	100	AA, T
Tributyltin	µg/l	0.002	M, T
Triphenyltin	µg/l	0.008	M, T
Polychlorochlormethyl-sulphonamidiphenyl (PCSDs)	µg/l	0.05	T, 95% of samples
Sulcofuron	µg/l	25	T, 95% of samples
Flucofuron	µg/l	1.0	T, 95% of samples
Permethrin	µg/l	0.01	T, 95% of samples
Cyfluthrin	µg/l	0.001	T, 95% of samples

Notes: 1. National environmental quality standards recommended for the UK
2. AA = Annual Average D = Dissolved T = Total M = Maximum Allowable Concentration
3. A Std denotes standards for the protection of sensitive aquatic life
B Std denotes standards for protection of other aquatic life

EQSs for List II Substances (Tidal Waters)

7.2.6 EC Urban Wastewater Treatment Directive

The EC Directive *concerning urban wastewater treatment* (91/271/EEC) specifies minimum standards for sewage treatment and sewage collection ssytems.

This Directive specifies secondary treatment for all discharges serving population equivalents greater than 2,000 to inland waters and estuaries, and greater than 10,000 to coastal waters. Discharges below these population equivalents receive appropriate treatment as defined in the AMP2 guidance note (see below). The Agency is responsible for making sure that discharges receive the level of treatment specified in this Directive.

This Directive also allows higher standards of treatment for discharges to *sensitive* areas, and /or lower standards of treatment to *less sensitive* areas. Sensitive areas are those waters which receive discharges from population equivalents of greater than 10,000, and are, or may become eutrophic in the future.

We present monitoring information to the DoE who decide whether a watercourse is sensitive. We then ensure that discharges to the sensitive area receive a higher level of treatment.

Less Sensitive Areas or *High Natural Dispersion Areas* (HNDAs) are those estuarine or coastal waters which are naturally very dispersive. In these areas a lower level of sewage treatment is required. However, dischargers must demonstrate that no harm will be caused to the environment by the lower level of treatment. We are responsible for ensuring that these studies are carried out correctly.

7.2.7 Annex 1A Reduction Programme

At the second and third North Sea Conferences in 1987 and 1990, the UK Government made a commitment to reduce the load (load = concentration x flow) of certain substances known as Annex 1A substances (listed below) entering tidal waters from rivers and direct discharges. Loads of most Annex 1A substances were to be reduced by 50%, and loads of mercury, cadmium and lead were to be reduced by 70%, by 1995 compared to a 1985 baseline (or a 1991/1992 baseline where data for 1985 is unavailable).

The Agency is responsible for carrying out monitoring and identifying significant sources of the following substances. We identify significant sources by ranking loads of Annex 1A substances in rivers and direct discharges according to their size. A discharge is significant if it belongs to the group of discharges that contribute the first 95% of the total load entering tidal waters. In accordance with DoE guidelines we identify where reductions can be made.

Third North Sea Conference - Priority Hazardous Substances (Annex 1A List of Substances)

Mercury
Cadmium
Copper
Zinc
Lead
Arsenic
Chromium
Nickel
Aldrin
Dieldrin
Endrin
Isodrin
HCH
DDT
Pentachlorophenol
Hexachlorophenol
Hexachlorobutadiene
Carbon tetrachloride
Chloroform
Endosulphan
Simazine
Atrazine
Triorganotin compounds
Azinphos-ethyl
Azinphos-methyl
Fenitrothion
Fenthion
Malathion
Parathion
Parathion-methyl
Dichlorvos
Trichloroethylene
Tetrachloroethylene
1,1,1-trichloroethane
Trichlorobenzene
1,2-dichloroethane
Polychlorinated biphenyls
Dioxins (*)
Trifluralin

At the Third North Sea Conference, the UK Government undertook to reduce loadings (flow x concentration) of the Annex 1A list of substances except Dioxins (*) entering UK tidal waters from rivers and direct discharges by 50% (70% for Hg, Cd, Pb) by 1995, against a 1985 baseline.

Note: AMP2 guidance note states:
In order of priority, schemes included are:

- those required to meet and maintain current EU and domestic statutory obligations
- those required to meet and maintain new EU and domestic statutory obligations
- those which have already been justified separately, required to maintain river quality relative to the 1990 NRA survey of water quality or to achieve river or marine improvements.

7.2.8 The GQA Classification

The GQA scheme is the Agency's classification system designed to provide an absolute measure and show trends in water quality over time. It has replaced the earlier National Water Council Scheme.

Biological GQA

The GQA Biology sampling programme is carried out every 5 years. Each river stretch to be classified is then assigned the site that most accurately represents its biological status. The GQA system is unsuitable for lakes, reservoirs and canals.

Biology is linked to water quality by biotic indices. The Agency uses the Biological Monitoring Working Party score as biotic indices. Different watercourses, and sites on the same watercourse, will support different invertebrates because of the particular geography, climate, geology, and the habitats that occur. The values of biotic indices derived from different sites will therefore vary, even when their water is of similarly good quality. Biotic indices cannot be used to compare the water quality of different sites, unless the sites are very similar morphologically and geographically. This suggests that it is best to describe biology in terms of a shortfall from that expected under conditions of good water quality.

To overcome the problem as detailed above, the GQA Biological classifications are based on Ecological Quality Indices (EQI):

Biological Class	Class Description	Lower class limits	
		EQI ASPT	EQI N-taxa
a	Very Good	1.00	0.85
b	Good	0.90	0.70
c	Fairly Good	0.77	0.55
d	Fair	0.65	0.45
e	Poor	0.50	0.30
f	Bad	0.00	0.00

The RIVPACS III computer program was used to predict the composition of the fauna, and hence the values of biotic indices, expected at any site under natural, unpolluted conditions, based on its physical and geographic characteristics. The EQIs of ASPT (Average Score Per Taxon) and number of taxa (N-taxa) are used to classify rivers into bands, the worst predictor determining the GQA classification.

7.2.9 EC Freshwater Fish Directive

The EC Directive *on the quality of waters needing protection or improvement in order to support fish life* (78/659/EEC) ensures that water quality in designated stretches of water is suitable for supporting certain types of fish.

This Directive contains two sets of quality standards. One set of standards protects cyprinid or coarse fish populations. The other set of standards are stricter and protect salmonid fish populations for example, salmon and trout. There are two sets of standards for each fishery type: imperative standards (I) which must be achieved; guideline standards (G) that Member States should aim to achieve.

The Agency is responsible for monitoring the quality of identified fisheries and reporting the results to the DoE who decide whether the standards in the Directive have been met. Where the requirements of this Directive are not met, we are responsible for identifying sources of pollution and making sure that improvements are made.

Determinand	Salmonid Water	Cyprinid Waters			
	G	I	G	I	
Dissolved Oxygen as mg/10_7	100% > 7	50% > 9	100% > 5	50% > 7	
pH as pH units	---	6.0 - 9.0	---	6.0 - 9.0	
Suspended Solids at mg/l	25	---	25	----	
BOD (Total) as mg/10_2	5	---	8	---	
Nitrite as mg/l N	0.15	000	0.46	000	
Non-ionised Ammonia as mg/l N	0.004	0.021	0.004	0.021	
Ammonia (Total) as mg/l N	0.03	0.78	0.16	0.78	
Total Residual Chlorine as mg/l HOCl	---	0.005	---	0.005	
	Hardness (mg/l $CaCo_3$)				
Zinc (Total) as mg/l Zn	0-50 50-100 100-250 >250	--- --- --- ---	0.03 0.20 0.30 0.50	--- --- --- ---	0.30 0.70 1.00 2.00
Copper (Dissolved) as mg/l Cu	0-50 50-100 100-250 >250	0.005 0.022 0.040 0.112	--- --- --- ---	0.005 0.022 0.040 0.112	--- --- --- ---

For dissolved oxygen, 50% median and 100% minimum standard/For suspended solids, the G value is an annual average concentration

7.2.10 EC Shellfish Hygiene Directive

The EC Shellfish Hygiene Directive *laying down the health conditions for the production and the placing on the market of live bivalve molluscs* (91/492/EC) protects the health of consumers of live bivalve molluscs such as mussels and oysters. This Directive defines standards for shellfish quality required in the end product. It also classifies bivalve mollusc shellfish harvesting areas into four categories according to the concentration of bacteria found in the shellfish flesh.

The Ministry of Agriculture, Fisheries and Food (MAFF) and the Department of Health (DoH) share responsibility for this Directive in England and Wales. The Agency has only a minor role in implementing this Directive. Although we provide information on the location of discharges that may affect harversting areas, we cannot control the quality of polluting discharges under this Directive.

7.2.11 EC Shellfish Waters Directive

The Shellfish Waters Directive *on the quality required of shellfish waters* (79/923/EEC) protects shellfish populations (defined as bivalve and gastropod molluscs) from harm caused by pollution. The Agency is responsible for monitoring the quality designated shellfish waters and reporting the results of the DoE who decide whether the standards in the Directive have been met. Where standards are not met, we are responsible for identifying sources of pollution and making sure that improvements are made.

The only designated site in Northumbria Area is at Ross Links in North Northumberland in the Cheviot and East Northumberland LEAP area.

7.3 Waste Categories

Waste Category A

Soil
Rock
Stone
Clay
Sand
Brick Bats
Slates
Uncoated clay-based tiles

Exclusions

Wastes included in this category are **not** permitted if they:

(a) are mixed with or contaminated with any material other than those listed in Category A above, or
(b) are in sludge or liquid form, or
(c) contain concentrations of contaminants above those given as 'Threshold Values' in the Inter-Departmental Committee for the Redevelopment of Contaminated Land, or
(d) are in a dust, ash, powdered or particulate form.

Waste Category B

Brickwork and concrete (hardcore)
Weathered/excavated coated roadstone (tarmac)
Weathered/excavated cement and cement products
Glass, pottery, ceramics, china, enamels (baked and finished products) and mica
Silica
Plastics (as finished products or manufacturing scrap)
Metal (iron, steel, aluminium, brass, copper, tin, zinc)
Incinerator residues (excluding household, difficult and special wastes)

Exclusions

Wastes included in this category are **not** permitted if they:

(a) are mixed with or contaminated with any materials other than those listed in Category A or B above, or
(b) are in sludge or liquid form (not self-supporting), or
(c) contain concentrations of contaminants above those given as 'Threshold Values' in the Inter-Departmental Committee for the Redevelopment of Contaminated Land, or
(d) are in a dust, ash, powdered or particulate form and are not double bagged in polythene or other suitable handling means as agreed in writing by the Agency prior to its acceptance of the material.

Waste Category C

Waste food
Household waste (or similar waste from institutional, industrial or commercial premises) - including separately collected fractions
Garden, arboricultural, botanical, aquacultural and horticultural waste (excluding chemicals)
Plasterboard
Wood, wood products and wood-based processing wastes
Leather
Incinerator residues
Treated sewage sludge
Road gully and sweeping detritus
Natural and man-made fibres
'Fresh' cement
Packaging, absorbents, wiping cloths, filter materials, protective clothing
'Fresh' coated roadstone (tarmac and bitmac)

Exclusions

Wastes included in this category are **not** permitted if they:

(a) are mixed with or contaminated with any materials not authorised elsewhere in this licence, or
(b) are in a liquid or sludge form (not self-supporting), or
(c) contain concentrations of contaminants above those given as 'Action Values' in the Inter-Departmental Committee for the Redevelopment of Contaminated Land, or
(d) are in a dust, ash, powdered or particulate form and are not double bagged in polythene or other suitable handling means as agreed in writing by the Agency prior to its acceptance of the material.

Waste Category D: Difficult Wastes

Waste Management Paper No 26 contains a classification of Difficult Wastes to which this category applies. From the Difficult Wastes classification only the following types of waste are authorised by this licence:

C12	Calcium oxide
C91	Calcium hydroxide
C92	Sodium and/or potassium carbonate
J12	Asbestos - hard bonded types only
J40	Silt and dredging
L20	Finished products and manufacturing scrap
L60	Ion-exchange resin wastes
M40	Vegetable and other oils
M60	Fats, waxes and greases
Q10	Used filter materials, eg kieselguhr, carbon, filter cloths
Q20	Contaminated rubbish (including bags and sacks) - *but only if contaminated by wastes authorised elsewhere by this licence*
Q30	Empty used containers - *must be decontaminated if previously contained a material not authorised by this licence*
S20	Cellulose wastes (natural and synthetic)
S50	Soap and detergents
T20	Food processing wastes (including starch)

Wastes within this category will be permitted in quantities in **combined total** up to 5% by weight of the monthly intake of Category C wastes and only into cells of waste having sufficient absorptive capacity.

Exclusions

Wastes included in this category are **not** permitted if they are:

(a) mixed with or contaminated by any wastes not authorised elsewhere in this licence, or

(b) in a liquid or sludge form (not self-supporting), or

(c) in a dust, ash, powdered or particulate form and are not double bagged in polythene or other suitable handling means as agreed in writing by the Agency prior to its acceptance of the material.

Waste Category E: Clinical Wastes

Clinical waste Groups A to E as categorised in the Health and Safety Commission document on the safe disposal of clinical waste (1992 revision) and listed below:

Group A All human tissue, including blood (whether infected or not), animal carcasses and tissue from veterinary centres, hospitals or laboratories and all related swabs and dressings.
Waste materials where the COSHH assessment indicates a risk to staff handling them, for example from infectious disease cases.
Soiled surgical dressings, swabs and other soiled waste from treatment areas.

Group B Discarded syringe needles, cartridges, broken glass and any other contaminated disposable sharp instruments or items.

Group C Microbiological cultures and potentially infects waste from pathology departments (laboratory and post-mortem rooms) and other clinical or research laboratories.

Group D Certain pharmaceutical products and chemical wastes.

Group E Items used to dispose of urine, faeces and other bodily secretions or excretions assessed as not falling within Group A. This includes used disposable bed pans to bed pan liners, incontinence pads, stoma bags and urine containers.

Waste Category F

Fibrous asbestos is found commonly in three forms: crocidolite (blue), amosite (brown), and chysolite (white). It also occurs an anthophyllite, tremolite and actinolite. The handling and disposal of this material shall have due regard to the relevant information contained within the following Regulations and Code of Practice:

- The Control of Asbestos at Work Regulations 1987 (SI 1987 No 2115)
- The Control of Asbestos at Work (Amendment) Regulations 1988 (SI 1988 No 712)
- The Control of Asbestos at Work (Amendment) Regulations 1992 (SI 1992 No 3068)
- Waste Management Paper Number 18 - Asbestos Waste
- IWM Code of Practice for the Disposal of Asbestos Waste

Waste Category G: Special Waste

Special Waste shall apply to any controlled waste which:

(a) consists of or contains any of the substances listed in Part I (below) and by reason of the presence of such substance,
  (i) is dangerous to life within the meaning of Part II (below), or
  (ii) has a flash point of 21°C or less as determined by the methods and with the apparatus laid down by the British Standards Institution in BS3900: Part A, 8: 1976 (EN53), or

(b) is a medicinal product, as defined in Section 130 of the Medicines Act 1968(b), which is available only in accordance with a prescription given by an appropriate practitioner as defined in Section 58(1) of that Act.

Schedule 1

Part I

Acids and alkalis
Antimony and antimony compounds
Arsenic compounds
Asbestos (all chemical forms)
Barium compounds
Beryllium and beryllium compounds
Biocides and phytopharmaceutical substances
Boron compounds
Cadmium and cadmium compounds
Copper compounds
Hexavalent chromium compounds
Heterocyclic organic compounds containing oxygen, nitrogen or sulphur
Hydrocarbons and their oxygen, nitrogen or sulphur compounds
Inorganic cyanides
Inorganic halogen-containing compounds
Inorganic sulphur-containing compounds
Laboratory chemicals
Lead compounds
Mercury compounds
Nickel and nickel compounds
Organic halogen compounds, excluding inert polymeric materials
Phosphorus and its compounds
Peroxides, chlorates, perchlorates and azides
Silver compounds
Pharmaceutical and veterinary compounds
Tellurium and tellurium compounds
Selenium and selenium compounds
Vanadium compounds
Tarry material from refining and tar residues from distilling
Thallium and thallium compounds
Zinc compounds

Part II

1. Waste is to be regarded as dangerous to life for the purposes of these regulations if:
   (a) a single dose of not more than five cubic centimetres would be likely to cause death or serious damage to tissue if ingested by a child of 20 kilograms' body weight, or
   (b) exposure to it for fifteen minutes or less would be likely to cause serious damage to human tissue by inhalation, skin contact or eye contact.

2. Special waste delivered to the site. These may include any of the Department of the Environment categories:

Waste Category		Typical examples
A	Inorganic acids	Hydrochloric, sulphuric acids
B	Organic acids	Acid anhydrides
C	Alkalis	Ammonia
D	Toxic metal compounds	Cadmium, mercury, lead solutions
G	Metal oxides	Cadmium oxide
H	Inorganic compounds	Cyanide, arsenic, nitrates
J	Other inorganic materials	Asbestos
K	Organic compounds	Phenols, peroxides, trichloroethene, alcohols
M	Fuels, oils and greases	Petrol, diesel, paraffin, vegetable oil
N	Fine chemicals and biocides	Pesticides, herbicides
P	Miscellaneous chemical waste	Laboratory chemicals, unidentified cans, bottles etc
R	Tars, paint, dyes and pigments	Paint, ink, varnish
T	Animal and food waste	Blood, fat, glue

GLOSSARY OF ABBREVIATIONS

3Es	Emissions, Efficiency and Economics
ADAS	Agricultural Development Advisory Service
AEG	Area Environment Group
AMP	Asset Management Plan
AONB	Area of Outstanding Natural Beauty
ASPT	Average Score per Taxon
BAP	Biodiversity Action Plan
BATNEEC	Best Available Technique Not Entailing Excessive Cost
BCU	British Canoe Union
BMP	Best Management Practice
BOD	Biochemical Oxygen Demand
BPEO	Best Practicable Environmental Option
C2C	Coast to coast
CBI	Confederation of British Industry
CCTV	Closed Circuit Television
CO	Carbon Monoxide
CO_2	Carbon Dioxide
COPA74	Control of Pollution Act 1974
CSO	Combined Sewer Overflow
COSHH	Control of Substances Hazardous to Health
DC	District Council
DoE	Department of the Environment
EC	European Community
EPAQ	Expert Panel for Air Quality
EQI	Ecological Quality Index
EQS	Environmental Quality Standard
ESA	Environmentally Sensitive Area
EU	European Union
FDMS	Flood Defence Management System
FRCA	Farming and Rural Conservation Agency
FWAG	Farming and Wildlife Advisory Group
GQA	General Quality Assessment
HCH	Hexachlororocyclohexane

HNDA	High Natural Dispersement Area
HE	House Equivalents
HMIP	Her Majesty's Inspectorate of Pollution
HOF	Hands Off Flow
INCA	Industry and Nature Conservation Association
IPC	Integrated Pollution Control
IWM	Institute of Water Management
LA	Local Authority
LAQM	Local Air Quality Management
LDA91	Land Drainage Act 1991
LEAP	Local Environment Agency Plan
LUB	Land Use Band
MAFF	Ministry of Agriculture, Fisheries and Food
MBC	Metropolitan Borough Council
MMF	Minimum Maintained Flow
NFU	National Farmers Union
Nox	Oxides of Nitrogen
NRA	National Rivers Authority
NWC	Northumbrian Water Classification
NWL	Northumbrian Water Limited
OFWAT	Office of Water Trading
PCB	Polychlorobiphenyl
PhD	Doctor of Philosophy
pSAC	proposed Special Area of Conservation
pSPA	proposed Special Protection Area
RAS	Radioactive Substances
RE	Rivers Ecosystem
REPAC	Regional Environment Protection Advisory Committee
RFAC	Regional Fisheries Advisory Committee
RFDC	Regional Flood Defence Committee
RIGS	Regionally Important Geological Sites
RIVPACS	River Invertebrate Prediction and Classification System
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SAM	Scheduled Ancient Monument

SEPA	Scottish Environment Protection Agency
SFC	Sea Fisheries Committee
SoS	Standards of Service
SMP	Shoreline Management Plan
SO_2	Sulphur dioxide
SPA	Special Protection Area
SSSI	Site of Special Scientific Information
STW	Sewage Treatment Works
SWQOs	Statutory Water Quality Objectives
TBT	Tributyl-tin
TCMA	Thousand Cubic Metres per Annum
TCMD	Thousand Cubic Metres per Day
TWWDP	Tyne and Wear Watersports Development Project
UDP	Unitary Development Plan
UWWTD	Urban Waste Water Treatment Directive
VOC	Volatile Organic Compound
WCA	Waste Collection Authorities
WDA	Waste Disposal Authorities
WLMP	Water Level Management Plan
WQO	Water Quality Objective
WRA91	Water Resources Act 1991

GLOSSARY OF TERMS

Abstraction	Removal of water from surface or groundwater, usually by pumping.
Abstraction Licence	Licence issued by the Agency under Section 38 of the Water Resources Act 1991 to permit water to be abstracted. The maximum annual, daily and hourly abstraction rates are normally set within the terms of the licence.
Air Quality Standards	This is the concentration of an air pollutant above which it is regarded as hazardous and below which it is regarded as safe.
Air Quality Guideline	An objective measure of air quality against which ambient concentrations can be compared.
Air Pollutant	An atmospheric trace constituent that between its points of discharge to the atmosphere and ultimate removal causes harm top a target.
Air Quality Data	At least three elements are to quantify air quality: • A numerical quantity • Units • An averaging period
Aquifer	A layer of underground porous rock which contains water and allows water to flow through it.
Area of Outstanding Natural Beauty	Areas of Outstanding Natural Beauty are designated under the National Parks and Access to the Countryside Act 1949 by the Countryside Commission. Their primary purpose is to conserve natural beauty.
Baseflow	That part of the flow in a watercourse made up of groundwater and discharges; it sustains the stream during periods of low rainfall.
Berm	A shelf at the base of a bank at normal flows which gives extra channel width in high flows.
Beta Particle	An electron or positron emitted from a nucleus in certain types of radioactive disintegration.
Biochemical Oxygen Demand	BOD is a measure of the amount of oxygen consumed in water, usually as a result of its organic content.
Catchment	Area bounded by the watershed from which water runs off to any given river valley.
Combined Sewer Overflow	An overflow structure which permits a discharge from the sewerage system during wet weather conditions.
Confluence	The point at which two, or more, rivers meet.
Consent to Discharge	The statutory document issued by the Agency to indicate any limits and conditions on a discharge.
Culvert	A man-made structure, for example a pipe, carrying a watercourse underground.
Cumecs	Cubic metres per second.
Dangerous Substances	Substances defined by the European Commission as being in need of special control because of their toxicity, bioaccumulation or persistence. The substances are classified as List I or List II according to the Dangerous Substances Directive (76/464/EEC).
Deposition	Where a river flows slowly it may deposit gravel, sand and silt in its channel - often on the inside edge of beds or meanders.
Diffuse Pollution	Pollution without a single point source; eg acid rain, pesticides, urban run-off, etc.
Directive	Legislation issued by the European Community which is binding on the member states.

Dissolved Oxygen

The amount of oxygen dissolved in water. Oxygen is vital for life so this measurement is an important, but highly variable, indicator of the 'health' of the water. It is used to classify rivers.

Drift Deposits

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

Facies

Geological expression for the character of rock expressed by its composition, fossil content etc.

Floodplain

Land adjacent to a watercourse and covered by a water in times of flood.

Flow Measurement

m^3/s Cubic metres per second (cumec)
l/s Litres per second
Mld Megalitres per day
mgd Millions of gallons per day

Conversion Table

m^3/s	Mld	mgd
0.012	1	0.224
0.06	5	1.12
0.12	10	2.24
0.24	20	4.48
0.6	50	11.2
1.2	100	22.4

Fly Tipping

The unregulated and, hence, illegal dumping of waste.

Geomorphology

The study and science of landforms and the processes that form them.

Geomorphological Features

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

Greywacke

A dark coarse-grained sandstone.

Groundwater

Water contained in the pores and fissures of aquifers (water bearing strata).

House Equivalent

A measure used for assessing the value of property and land protected against flooding.

Hydrometry

Measurement of hydrological entities.

Invertebrate fauna

Animals without a backbone, eg insects.

Landfill

Site used for solid waste disposal into/onto land.

Leachate

Liquid which seeps through a landfill, and by so doing, extracts substances from the deposited wastes.

Local Nature Reserve

LNRs are declared by Local Planning Authorities in consultation with English Nature under the National Parks and Access to the Countryside Act 1949. LNRs cover areas of local conservation interest.

Main River

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

Marginal

At the water's edge.

National Nature Reserve	National Nature Reserves (NNRs) are statutory, declared under Section 19 of the National Parks and Access to the Countryside Act 1949, or Section 35 of the Wildlife and Countryside Act 1981.
Potable Water	Water of suitable quality for drinking.
Ramsar Site	(Wetlands of International Importance) Ramsar sites are statutory areas designated by the UK Government under the International Ramsar Convention (the Convention on Wetlands of International Importance especially as Waterfowl Habitat). This requires signatory states to designate wetlands of international importance and promote their conservation and wise use. Ramsar sites are designated for their waterfowl population, plant and animal assemblages, wetland interest or a combination of these. Sites designated at Ramsar sites may also be Special Protection Areas (SPA).
Return Period	The frequency within which, on average, a flood event of a certain severity may be expected to return (expressed in years); eg 1 in 50 years.
Riparian Owner	Owner of land abutting a river or lake. Normally riparian owners own the bed of the river to the mid-point of the channel.
River Corridor	Land which has visual, physical or ecological links to a watercourse and which is dependent on the quality of level of the water within the channel.
River Quality Objective	The level of water quality that a river should achieve in order to be suitable for agreed uses.
Salmonids	Fish classified as belonging to the salmon family; ie salmon, trout, char.
Sensitive Marine Areas	A SMA is a non-statutory marine area of national importance, notable for marine animal and plant communities. A SMA is identified by English Nature so that the area is taken into account by estuarine and coastal management frameworks. These areas rely on the cooperation of users and local communities to achieve sustainable mangement, with the help of grant aid. There is
Septic Tank	A small tank receiving and treating sewage by biological processes.
Sewage Sludge	Accumulated solids from the sewage treatment process. Sludge can be incinerated, spread on farmland, etc. It typically contains 70-90% water, prior to dewatering.
Slurry	Animal waste in liquid form.
Site of Special Scientific Interest	A SSSI is a site designated under the Wildlife and Countryside Act 1981 by English Nature as a result of its nature conservation or geological value.
Source Control	A collective term used to describe the management of run-off at or near the point of impact of rainfall and before it reaches the piped drainage and sewerage systems of urban areas (see Swale). They include balancing ponds, permeable pavements and water butts.
Special Areas of Conservation	SACs are designated under the EU Directive on the Conservation of Natural Habitats and Wild Fauna and Flora (92/43/EEC). This requires member states to designate areas as SACs to protect important wildlife habitats or threatened species. The SAC designation is implemented in the UK by the Conservation (Natural Habitats etc) Regulations 1994. Planning Policy Guidance Note 9 (PPG 9) also gives detailed information on the requirements of the Habitats Directive. In addition, MAFF has published guidelines with particular reference to the implications of SAC designation on flood and coastal defence, these guidelines also apply to SPAs (MAFF, 1995).
Special Protection Area (SPA)	SPAs are designated under the EU Directive on the Conservation of Wildbirds (79/409/EEC). This requires member states to take conservation measures to protect certain rare or vulnerable species and migratory birds. This is achieved by the statutory protection afforded to a site by being designated as an SPA. The designation is implemented through the EU Directive (92/43/EEC on the conservation of natural habitats and wild fauna and flora, the Conservation (Natural Habitats, etc) Regulations 1994 and the Wildlife and Countryside Act 1981, all SPAs have to be first notified as an SSSI. In addition, the Habitats Directive amends the Birds Directive by applying to SPAs the same requirements for protection from damage as apply to SACs.

Strata	Layers of rock, including unconsolidated materials such as sands and gravel.
Sustainable	Capable of being maintained at a steady state without exhausting natural resources or causing ecological damage.
Sustainable Development	Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.
Swale	An example of source control attenuation, swales are grass channels used to convey and treat run-off.
Topography	Physical features of geographical area.
Washlands	The area of the floodplain where water is stored in times of flood. Structures can be added to control the amount of water stored in the washland and time its release to alleviate peak flood flows in areas downstream.
Waste	Waste is defined in the Control of Pollution Act 1974 Section 30(1) to include: (a) any substance which constitutes a scrap material or an effluent or other unwanted surplus substance arising from the application of any process; and (b) any substance or article which requires to be disposed of as being broken, worn out, contaminated or otherwise spoiled, but does not include a substance which is an explosive within the meaning of the Explosives Act 1875.
Waste Arisings	Waste produced by companies or households.
Watercourse	A stream, river, canal or channel along which water flows.
Watertable	The surface of a body of groundwater within the underground strata. The watertable will fluctuate as a result of natural or artificial causes.

MANAGEMENT AND CONTACTS:

The Environment Agency delivers a service to its customers, with the emphasis on authority and accountability at the most local level possible. It aims to be cost-effective and efficient and to offer the best service and value for money.

Head Office is responsible for overall policy and relationships with national bodies including Government.

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The 24-hour emergency hotline number for reporting all environmental incidents relating to air, land and water.

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