

local environment agency plan

SWALE, URE AND OUSE CONSULTATION REPORT JUNE 1997



ENVIRONMENT
AGENCY

YOUR VIEWS

The Swale, Ure and Ouse Local Environment Agency Plan Consultation Report is the Agency's view of the state of the environment in this area and the issues that we believe need to be addressed.

We should like to hear your views:

- Have all the major issues been highlighted?
- Have the objectives and proposals been correctly identified?
- Do you have any comments to make regarding the plan in general?

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

The Environment Planner
Swale, Ure and Ouse LEAP
The Environment Agency North East Region
Coverdale House
Amy Johnson Way
York
YO3 4UZ

All comments must be received by 30 September 1997.

All comments received on the Consultation Report will be considered in preparing the next phase, the Action Plan. This Action Plan will focus on updating section 4 of this Consultation Report by turning the proposals into actions but the remainder of this Report will not necessarily be rewritten.

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 shall be pleased to note.

Structure of this Consultation Report

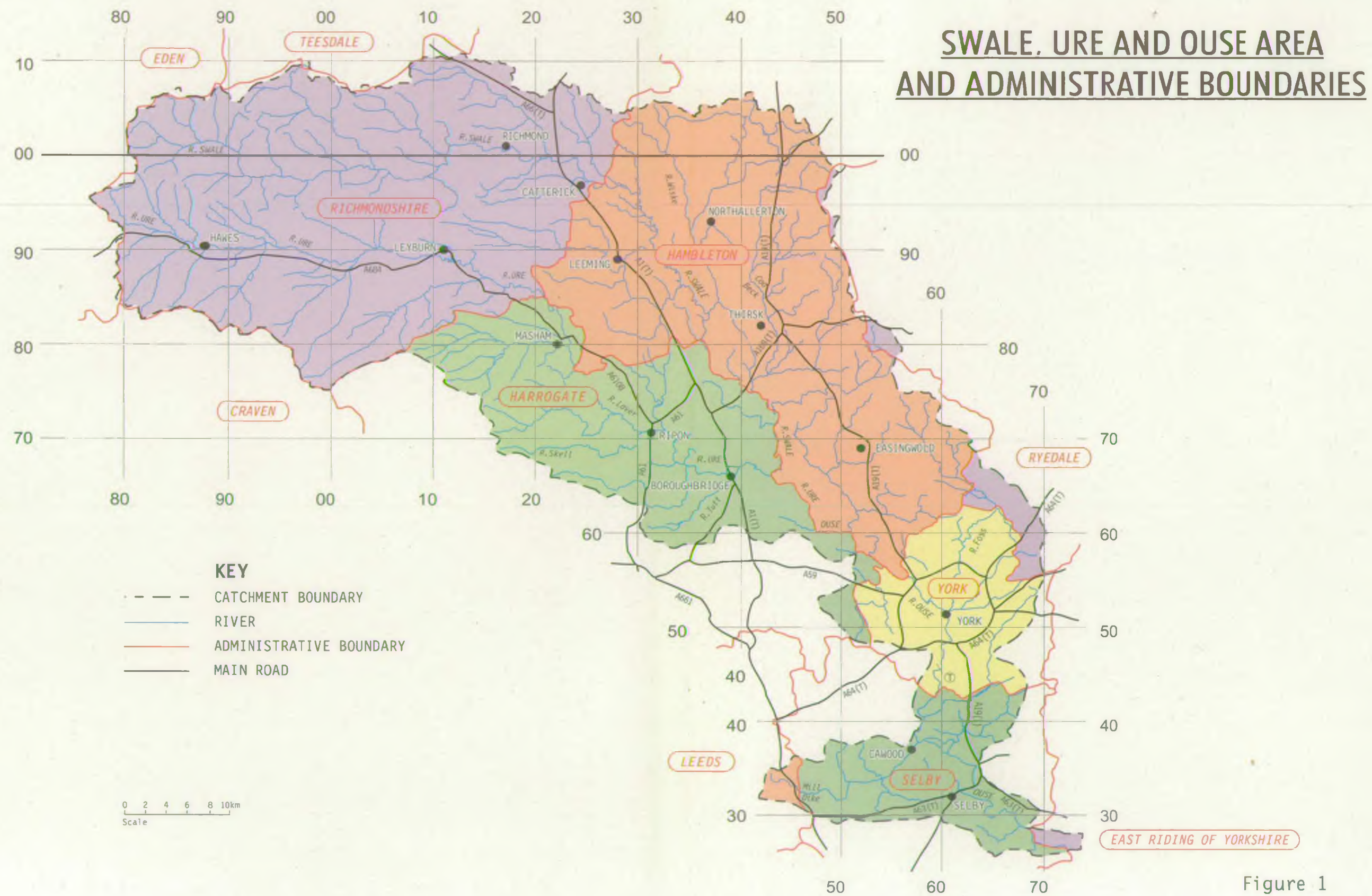
This Consultation Report is divided into two parts, Part I and Part II. A brief description of each can be found below.

PART I

Consists of an introduction to the Agency, an overview of the Swale, Ure and Ouse area, key partnerships the Agency has with other bodies and proposals we feel will address the important environmental issues in the area.

PART II

Detailed consideration is given to the state of the environment of the Swale, Ure and Ouse area. Supporting information can be found here to help you make an informed decision as to the validity of the issues and proposals in Part I.



FOREWORD

The Environment Agency is one of the most powerful environmental regulators in the world. By combining the regulation of air, land and water, we have a unique opportunity to look at our environment in an integrated way.

Local Environment Agency Plans aim to provide a means for setting priorities, solving problems and protecting and improving the environment in a co-ordinated way. The Swale, Ure and Ouse Local Environment Agency Plan Consultation Report has been drawn up for consultation with those interested in the future of the local environment. It provides a focus for all parties to undertake and achieve environmental improvements in a sustainable manner.

This, and subsequent plans in the Region, will represent a shared vision for the future and play a vital role in the protection of our environment, whilst recognising the ever competing pressures and the need to balance cost and benefit.



Roger Hyde

Regional General Manager



DRAFT VISION FOR THE SWALE, URE AND OUSE AREA

The Swale, Ure and Ouse area covers a geographically very diverse landscape from the protected, designated uplands of the Yorkshire Dales National Park through the City of York to the Port of Selby. This diversity in landscape and heritage attracts many visitors to the area each year, whether this be for recreational activities in the National Park or simply to enjoy the pleasures of the City of York.

Most of the area is rural, with the population and industry being concentrated around the City of York and the Port of Selby in the south.

Given such contrasts, there are numerous opportunities for the Agency to work together with the wider community for the benefit of the environment. The challenge of managing the environment is in effectively responding to the range of pressures on the area and reconciling all the uses demanded of it, whether for agriculture, industry, water supply, waste disposal, fisheries, conservation, recreation or protection from flooding.

Within the Swale, Ure and Ouse area, effluent disposal, pollution from rural land uses, the impact of mining on the environment and the impact of drought are issues considered to be particularly important.

Key Environment Agency aspirations for the Swale, Ure and Ouse area are to:

- prevent pollution from rural activities;
- reduce the impact of discharges, in particular to the River Ouse;
- protect the natural beauty and conserve the native flora and fauna;
- limit the impact on the environment of mining in the Selby area;
- protect the groundwater resource and minimise the impact of recent and future droughts;
- reduce environmental impacts from industrial sites by improved operational practice;
- protect people and property from flooding where economically and environmentally feasible.

Finally, the Agency wishes to establish strong involvement and links with local authorities, water companies, internal drainage boards, industry, landowners, farmers, environmental organisations and the general public to ensure local views are respected when future development decisions are made for the area. It will therefore work with all relevant parties to implement the principles of sustainable development.

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PART I

Part I introduces the Environment Agency; examines the Swale, Ure and Ouse area in terms of natural and physical features; highlights many of the partnerships which exist to protect our environment; identifies a number of issues and proposals for action to make a difference to the area.

1.0 INTRODUCTION

1.1 THE ROLE OF THE ENVIRONMENT AGENCY

The Environment Agency for England and Wales was established on 1 April 1996 and aims to provide high quality environmental protection and improvement. Its creation is a major and positive step forwards, merging the expertise of the former National Rivers Authority, Her Majesty's Inspectorate of Pollution, the waste regulation authorities and certain sections of the Department of the Environment (DoE), to create a new organisation taking an integrated approach to environmental protection and enhancement. This integrated approach, along with an increased level of public participation, will help the Agency and the community contribute to the world-wide environmental goal of sustainable development.

The Agency's vision is:

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

It will:

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

The aims of the Environment Agency are listed in Appendix A.

1.2 LOCAL ENVIRONMENT AGENCY PLANNING - THE PROCESS

The aim of a Local Environment Agency Plan is to identify, prioritise and cost environmentally beneficial actions which the Agency and consultees will work together to deliver.

This is achieved by:

- focusing attention on the environment of a specific area;
- involving interested parties in planning for the future of the area;
- establishing an integrated plan of action for managing the local environment over the next five years.

The Agency seeks active input into Local Environment Agency Plans (LEAPs) from

individuals or organisations concerned with the environment. The Agency would wish to see the document used to influence and/or assist in the planning processes of others where their decisions may impact on the management of the environment.

Local Environment Agency Plans are the successors to Catchment Management Plans produced by the National Rivers Authority. These Plans do not replace local authority local plans, but should be regarded as complementary to them.

The process of Local Environment Agency Planning involves several stages, as outlined below.

The Consultation Report

The Swale, Ure and Ouse Local Environment Agency Plan will form one of a number of plans to be produced by the North East Region of the Environment Agency.

The publication of this Consultation Report marks the start of a three month period of formal consultation, enabling external organisations and the general public to work with the Agency in planning the future of the environment in the Swale, Ure and Ouse area.

The Consultation Report describes the area, reviews the state of the local environment, identifies the environmental issues which need to be addressed then makes proposals for action to address them.

The purpose of the consultation phase is to:

- establish the current state of the local environment;
- obtain views on the issues facing the environment;
- begin the process of formulating and implementing an Action Plan (see below).

The Action Plan

The Local Environment Agency Action Plan will include:

- a final vision for the Swale, Ure and Ouse area;
- a policy framework based on identified issues for the management of the environment over a five year period;
- costed action plans to address identified issues.

These elements will be prepared once the period of consultation on this document has been completed and full consideration has been given to the responses received.

The Agency will monitor the implementation of the plan through regular consultation both internally and with committed parties. Although these plans are non-statutory their aim is to provide a framework for the integrated management of the local environment through the corporate action of the Agency and other bodies.

The Annual Review

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

The review document will contain of the following information:

- a detailed comparison of actual 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.

1.3 SUSTAINABLE DEVELOPMENT AND THE ENVIRONMENT AGENCY

Environmental sustainability requires *"Development that meets the needs of the present without compromising the ability of future generations to meet their own needs."* This requires a full consideration of environmental, social and economic issues during the decision-making process. This is an approach was emphasized at the Rio Earth Summit, European Union and the UK government.

At the 1992 United Nations Conference on Environment and Development (the Rio Earth Summit) the UK signed up to Agenda 21 (the Biodiversity Convention) and then published "Sustainable Development; the UK Strategy" and "Biodiversity; the UK Action Plan" (DoE 1994). The Government objective of securing sustainable development has been reinforced by the Environment Act 1995 and various planning policy guidance notes, for example PPG 12 "Development Plans and Regional Guidance"(DoE, 1992) which states that;

"Sustainable development does not mean having less economic development: on the contrary, a healthy economy is better able to generate the resources to meet people's needs, and investment and environmental improvement often go hand in hand. Nor does it mean that every aspect of the present environment should be preserved at all costs. What it requires is that decisions throughout society are taken with proper regard to their environmental impact."

The Agency works towards sustainable development through seven objectives set by Government Ministers.

- an integrated approach to environmental protection and enhancement, taking into account the impact of all activities and the availability of natural resources;
- delivery of environmental goals without imposing disproportionate costs on industry or society as a whole;

- clear and effective procedures for serving its customers, including the development of single points of contact within the Agency;
- high professional standards, using the best possible information and analytical methods;
- organisation of its own activities to reflect good environmental and management practice, and provision of value for money for those who pay its charges, as well as for taxpayers as a whole;
- provision of clear and readily available advice and information on its work;
- development of a close and responsive relationship with the public, including local authorities, other representatives of local communities and regulated organisations.

What Does Sustainable Development Mean for the Agency?

In line with the above, the Agency will include environmental impacts in its decision making. This applies at both policy and operational levels. This does happen, and will continue to happen, in the Agency but there are areas that need to be developed.

Because in many ways the environment is shared, collective action is necessary. The Agency will use the following guidelines whilst seeking to implement the principles of sustainable development:

- decisions should be based on the best possible scientific information and analysis of risks;
- where there is uncertainty and where potentially serious risks exist, precautionary action may be necessary;
- ecological impacts must be considered, particularly where resources are non-renewable or effects may be irreversible;
- costs implications should be brought home directly to the people responsible - the "polluter pays" principle.

Whilst exercising its duties, the Agency will have to make judgements about the weight to be put on these factors in particular cases. Sometimes environmental impacts have to be accepted as the price of economic development, but on other occasions, a site, an ecosystem, or some other aspect of the environment has to be regarded as so valuable that it should be protected from exploitation.

2.0 THE SWALE, URE AND OUSE AREA

This Section gives an overview of the local area and highlights some of its key features.

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2.0 THE SWALE, URE AND OUSE AREA

2.1 INTRODUCTION

The Swale, Ure and Ouse Plan covers an area of over 3200 km². The area extends from the high ground of the Pennines in the north and west which is shaped by the underlying limestone, to the lower ground of the Vale of York.

The area is predominantly rural but has significant industry in some of the smaller towns and villages in the extreme south; the rural village of Drax for example, is home to Western Europe's largest coal-fired power station. The area borders the traditional coal-fields of South Yorkshire and includes part of the large Selby coalfield.

Geographic Area

The Plan area is shown in Figure 1. The water catchment forms the boundary for the Plan for everything other than waste whose boundary has been extended to include the local authority boundaries of Hambleton and Richmondshire District Councils.

Several centres of population exist within the Plan area including Richmond, Thirsk, Ripon, Northallerton, York and Selby.

The area is crossed by several major road and rail links including the A1, A19 and A64 and the East Coast Main Line. The tidal River Ouse is an important navigational route as far as Naburn Weir.

The area includes, in whole or in part, one county council, three unitary authorities, seven district councils and the Yorkshire Dales National Park. The total population of the area is in the region of 250,000 permanent residents (based on the 1991 Census figures) although the number of day-visitors and holiday-makers during the year runs to several million people.

A brief description of each local government unit is given below.

The County of North Yorkshire

Seven districts within the County of North Yorkshire are included in whole or in part in this Plan; Eden, Hambleton, Harrogate, Richmondshire, Ryedale, Selby and Teesdale. Much of this area is rural/agricultural and characterised by a dispersed settlement pattern of market towns, villages and hamlets.

City of York and Unitary Authorities

Although a small area (approx. 270 km²), the York Unitary Authority has a relatively large population of 104,400 in the York urban area. The Plan also includes small parts of the Leeds and East Riding of Yorkshire unitary authorities.

Yorkshire Dales National Park

The Park covers 1,760 km² and has a population of around 19,000 permanent residents, although it receives millions of day visitors per year. Despite fluctuations in the numbers of visitors to the Park, the overall trend is one of a steady increase. Most of the Park is contained within the North Yorkshire County District of Richmondshire.

Under the Environment Act 1995, all the National Parks in England and Wales assumed (on 1st April 1997) the role of the local planning authority as defined by the various Town and Country Planning Acts.

2.2 AIR

2.2.1 AIR QUALITY

Most of the area is rural in nature and as such air quality is "good", mainly being affected by agricultural activities, domestic fuel burning, road traffic and smaller scale industries (regulated by local authorities). These smaller industries tend to be concentrated on the many industrial estates scattered throughout the area.

Obvious exceptions to the rural nature are the large power stations to the south of the area. Although only one, Drax is within the Plan area (see Issue 12), all three affect the air quality in the area and indeed far beyond. See 5.1.2, 5.1.4 & 6.2.

2.3 LAND

2.3.1 TOPOGRAPHY

There is a wide variation in topography within the Plan area reflecting changes in the underlying geology. In the north and west, the Pennines consist of a plateau dissected by the steep, narrow valleys of the rivers Swale and Ure. Most of the upland area is more than 600m above sea level, reaching a maximum height of 716m above sea level at the summit of Great Shunner Fell. This fell separates the headwaters of the River Ure from those of the River Swale and exhibits the "step topography", typical of parts of the Yorkshire Dales, where there are alternating sequences of shales, limestones and sandstones.

Swaledale and Wensleydale initially extend eastward towards the Vale of York, through hills that gradually decrease in height and then their rivers turn southwards to flow through the Vale of York towards the Humber estuary. The Vale of York is a flat low lying area between the Pennines on the west and the North York Moors and the Wolds on the east. South of York, much of the land is less than 20m above sea level (see Figure 2).

2.3.2 GEOLOGY

The characteristic limestone scenery of the Yorkshire Dales in Swaledale and Wensleydale is produced by the Carboniferous Limestone, which consists of a sequence of limestones and shales (see Figure 3). The rocks become progressively more recent in age down-river from the Dales. Sandstones and shales of the Carboniferous Millstone Grit form an area of grit moorland in the catchments of the Burn and Laver, tributaries of the River Ure, and in the catchments of some right bank tributaries of the River Swale.

The Permo-Triassic rocks of the Vale of York cut across the Carboniferous rocks. The Permian sequence, of two Magnesian Limestone and two Marl units, forms a north-south ridge of higher land on the western side of the Vale of York, followed for much of its length by the A1. These rocks dip gently eastward and are overlain by the Sherwood Sandstone which forms the Vale of York. This is in turn overlain on the eastern side of the Vale of York by the Mercia Mudstone and Jurassic Lias (a sequence of marls and mudstones). The Jurassic Sandstones and Limestones, which form the North York Moors, provide a westward facing escarpment along much of the eastern side of the Vale of York and also form the eastern boundary of the area.

2.3.3 SOIL TYPES

Soil is the uppermost layer of the earth's surface and is made as a result of the interaction of several components such as climate, fauna, flora, Man and time. It is generally the layer in which plants grow and its presence is therefore of vital importance to agriculture, especially in terms of nutrient content and drainage characteristics. Soils may be thin or absent on upland areas, but as expected are often thick and well developed in lowland areas or in valley bottoms. As with topography, the soil type is often a reflection of the underlying solid geology.

The rivers Ure and Swale rise in the uplands of the Pennines which are dominated by peat soils characteristic of moorland. The upper valleys are typified by surface-water gley soils (non-alluvial, seasonally waterlogged, slowly permeable soils). The river valleys quickly become dominated by Brown soils, with brownish or reddish subsoils suitable for agriculture. The land to the east of the River Swale below Catterick and Ripon is principally stagnogley soils typical of lowland conditions. A band of groundwater gley soils (seasonally waterlogged soils affected by shallow fluctuating groundwater table) extends south easterly from Thirsk, around York, to Selby.

SWALE, URE AND OUSE AREA TOPOGRAPHY

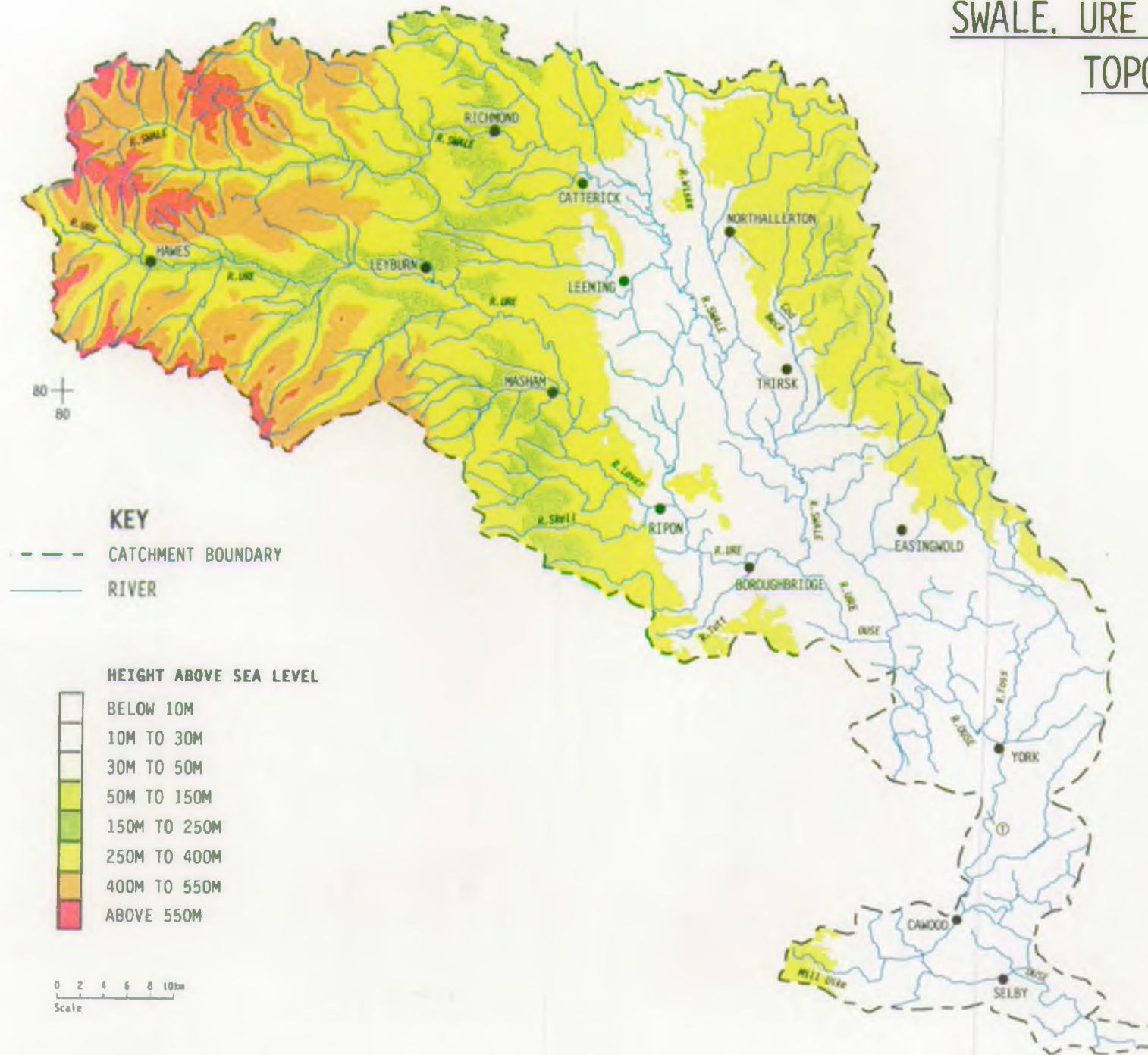
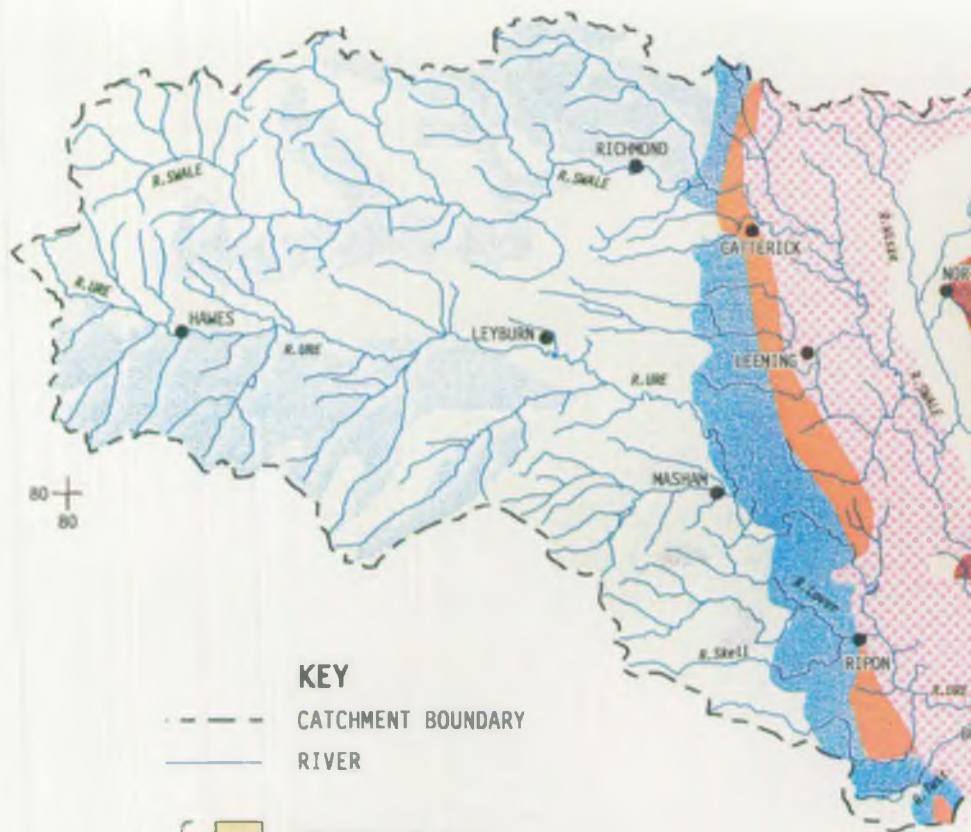


Figure 2

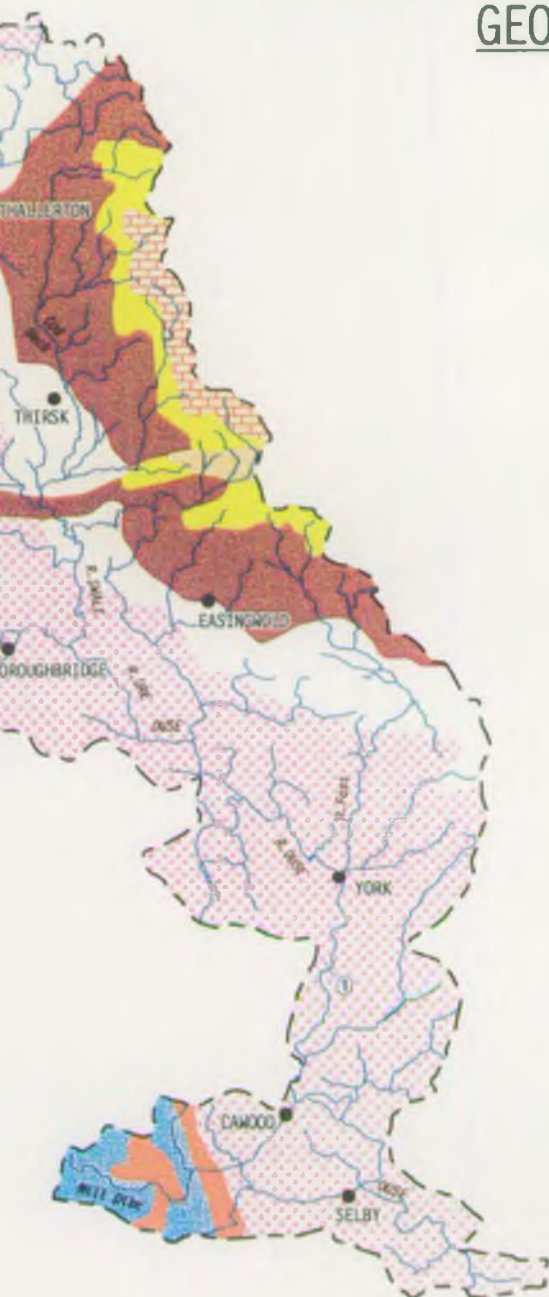


KEY

--- CATCHMENT BOUNDARY
 — RIVER

JURASSIC	{		KIMMERIDGE CLAY
			CORALLIAN LIMESTONE GROUP
			RAVENS CAR GROUP
			LIAS GROUP
TRIASSIC	{		MERCIA MUDSTONE GROUP
			SHERWOOD MUDSTONE GROUP
PERMIAN	{		PERMIAN MARL
			MAGNESIAN LIMESTONE
CARBONIFEROUS	{		COAL MEASURES
			MILLSTONE GRIT SERIES
			CARBONIFEROUS LIMESTONE SERIES

SWALE, URE AND OUSE AREA GEOLOGY



0 2 4 6 8 10 km
Scale

Figure 3

2.3.4 WASTE

The waste disposal needs of the area are currently served by five strategic landfill sites which collectively receive most of the household, commercial and industrial waste production. These sites are supported by 22 smaller landfill sites distributed throughout the area which accept mainly inert waste materials from the construction industry (see Figure 8). About half of these sites are licensed to take small amounts of household-type wastes.

The pattern of production of household, commercial and industrial waste follows the population distribution which in turn parallels the commercial and industrial base. Per capita production of waste roughly corresponds to the national average; however, per capita arisings of industrial waste are significantly lower, as would be expected from the largely rural Swale, Ure and Ouse area. Most industrial waste is generated in the south of the area. In the main, this waste is similar in nature to household waste along with waste from construction and demolition industries. However, there are specialised waste streams produced by some industries in the area and six organisations operate dedicated internal facilities for the treatment or disposal of these. Only small occasional quantities of special and/or difficult wastes arise and these can be disposed of at any one of the 5 strategic sites within the area.

The area has four household waste reception centres for public use with subsequent delivery of the waste to landfill sites. In addition a large number of facilities exist for the reception of materials recovered by the public from household waste. See 3.3, 5.2, 6.3.1.

2.4 WATER

2.4.1 THE RIVERS SWALE, URE AND OUSE

The River Swale originates as a series of small becks on the Northern Pennines within the Yorkshire Dales National Park. At Grinton it is joined by Arkle Beck and flows eastward along Swaledale passing through Richmond and Catterick. The river then turns south-east and flows parallel to the A1 to its confluence with the River Ure approximately 2 miles east of Boroughbridge. The River Swale is joined by many tributaries between Catterick and the River Ure. The major being Bedale Beck, which joins at RAF Leeming, the River Wiske, which joins 2 miles upstream of Skipton on Swale and Cod Beck, which flows through Thirsk to join just below Topcliffe (see Figure 1). Water quality in the main river and tributaries is generally good supporting high quality fisheries in addition to potable and agricultural water supply abstractions. The main exception is the River Wiske, where point and diffuse source pollution from rural land use, and discharges from Northallerton and Romanby sewage treatment works, cause downgrading of water quality.

The River Ure also rises in the Pennines within the National Park, and is formed by the combination of several small becks in and around the town of Hawes. It is joined by a

major tributary, the River Bain at Bainbridge; by Bishopdale Beck at Aysgarth; by the River Cover 1 mile east of Middleham, by the River Cover. Unlike other Dales of the area, the Dale through which the Ure flows is named after a local village rather than the river, hence the somewhat anomalous fact that the River Ure flows through Wensleydale. Water quality in the River Ure and its tributaries is mainly of good quality supporting similar uses to that of the River Swale. However, there are signs of eutrophication in the Hawes to Aysgarth reaches.

Further along its course, the River Ure is joined by the River Burn just south of Masham, the River Skell to the east of Ripon and the River Tutt at Boroughbridge. After its confluence with the River Swale the River Ure flows south-east and, just to the west of Linton-on-Ouse, becomes known as the River Ouse where Ousegill Beck flows in. From this point the River Ouse flows south as a freshwater river through the City of York to Naburn Weir, below which the river is tidal. Water quality is good upstream of the City of York but deteriorates downstream due to the impact of urban drainage, combined sewer overflows (CSOs), the River Foss and the Naburn sewage treatment works (see Issue 9). Below Naburn the tidal river quality is fair or poor because of the impact of upstream discharges plus sewage and trade effluent from Selby, together with the effects of the rivers Aire and Don.

Tributaries of the River Ouse include the rivers Kyle and Foss together with the rivers Nidd and Wharfe, Derwent and Aire which are the subject of separate Local Environment Agency Plans.

Being such a large and topographically varied area, the annual rainfall shows a wide range from 600 mm at Selby to 2000mm at the far north of the Ure catchment. With the head of the catchment having so much rain, effective rainfall exists all year long while the Vale of York has no effective rainfall during an average summer.

The Agency has a network of 27 river gauging stations (see Figure 4), which provide information on river flows and/or levels throughout the area. There are also a number of water level only monitoring stations. The data from these stations are used to produce flow statistics both on a long term and annual timescale

Twenty-three of the stations are incorporated into the Regional Telemetry System (RTS) and are used to gather and collate up-to-the-minute information during periods of high flow. This information is used by the Regional Flow Forecasting System (RFFS) during flood events to assist in the forecasting of river levels and river flows. Based on forecasts produced, and observed levels, warnings are issued to areas at risk from flooding.

**SWALE, URE
RIVER AIRE
GAUGING**

The map shows the River Aire catchment boundary as a dashed line. Rivers are shown as solid blue lines. Tidal limits are indicated by a cross symbol. Gauging stations and level recorders are marked with red dots and numbered 1 through 27. Recording rain gauges are marked with green dots and numbered 1 through 8.

KEY

- - - CATCHMENT BOUNDARY
- RIVER
- TIDAL LIMIT
- RIVER GAUGING STATION AND/OR LEVEL RECORDERS
- RECORDING RAINGAUGES

LOW HOUSES	(15) MONKTON P.S.	(1) TOW HILL
BAINBRIDGE	(16) SKELTON	(2) ARKENGARHTDALE
GRINTON BRIDGE	(17) HUNTINGDON	(3) EAST COWTON
LOWNETHWAITE BRIDGE	(18) FOSS BARRIER	(4) OSMOTHERLEY
CATTERICK BRIDGE	(19) VIKING	(5) LOWER DUNSFORTH
KILGRAM	(20) CAWOOD	(6) ACOMB LANDING (NOT ON RTS)
MICKLEY	(21) WISTOW SLUICES	(7) RICHMOND (NOT ON RTS)
KIRBY WISKE	(22) SELBY	(8) LUMLEY MOOR
DALTON	(23) BAT BRIDGE	
CRAKEHILL	(24) NEWTON-ON-OUSE	
ALMA WEIR	(25) RIPON (R LAVER)	
WESTWICK	(26) LEEMING	
BOROUGHBRIDGE	(27) NABURN LOCK (NOT ON RTS)	
ALDWARK BRIDGE		

Scale: 2 4 6 8 10km

2.4.2 HYDROGEOLOGY

The hydrogeology of the area is directly influenced by the local geology and the different rock types which may either hold or transmit water or may act as a barrier to groundwater flow. Water bearing rocks are described as aquifers and are important for several reasons including acting as a source of good quality water for water supply and providing baseflow to rivers.

The Sherwood Sandstone and Magnesian Limestone are the most important aquifers in terms of water supply and are classified as major aquifers. Fissuring of the Magnesian Limestone, which is often associated with faulting, together with karstic conditions may provide large borehole yields, but also make the aquifer particularly vulnerable to contamination.

The Millstone Grits are also classified as a major aquifer because of the large number of public water supply sources within them. Their hydrogeology is extremely complex because of extensive faulting and fissuring of the sequence.

Within the Carboniferous rocks of the Yorkshire Dales, the limestones and sandstones are classified as minor aquifers. These often outcrop on hillsides where they give rise to springs. In the Dales, these springs are often important as sources of public and private water supply but are vulnerable to contamination, particularly after heavy rain. Sinks, where water disappears to flow underground, are also common in the limestones and have a significant influence on the hydrogeology and drainage patterns of the local environment. Fissure flow is the dominant form of groundwater movement within the aquifer and makes it very vulnerable to pollution.

The drift deposits, mostly glacial in origin, are also classified as a minor aquifer. Where drift is present, and especially in areas where it is very thick, it exhibits a variety of different types including boulder clay, lacustrine clay, sands, gravels and silts. This results in complex patterns of groundwater movement through and within the drift, and also causes a delay, and a reduction, in the amount of recharge to the underlying aquifers.

Finally, some rocks, such as shales, mudstones, marls and clays are generally considered to be impermeable and are classified as non-aquifers. Within the Plan area, the most important non-aquifers are the Mercia Mudstone and the Permian Marls within the Magnesian Limestones. Although they are unable to support large-scale abstractions, non-aquifers are very important in terms of providing protection from contamination to the underlying aquifer. See 5.3 & 6.4.

2.5 WILDLIFE AND HERITAGE

The wildlife and heritage features of the area of principal interest to the Agency are those associated with the water environment and this provides the focus for this section.

2.5.1 CONSERVATION

The Swale, Ure and Ouse area is extensive in scale and rural in character containing over 50 SSSIs, parts of 2 National Parks and 2 Areas of Outstanding Natural Beauty (AONBs) (see Figure 14).

In terms of landscape conservation the upper catchments of the rivers Swale and Ure are within the Yorkshire Dales National Park and are relatively well protected from inappropriate development. The headwaters of certain western tributaries of the River Swale rise in the Yorkshire Dales National Park and the Foss rises in the Howardian Hills AONB, whilst sections of the River Ure fall within the Nidderdale AONB.

One special feature of the landscape is the "karst" scenery of the Carboniferous limestone, large parts of which are designated as SSSIs for their characteristic landforms and associated flora and fauna. Of particular importance are the areas of limestone pavement, an erosion feature formed of water worn limestone. It is estimated that only about 3% of such features in the North of England remain undamaged by the extraction of stone for decorative purposes. English Nature and the Countryside Commission are empowered, under the Wildlife and Countryside Act 1981, to make Limestone Pavement Orders preventing further damage.

In wildlife terms, the traditional hay meadows of the Dales are important and these botanically rich features, managed for many hundreds of years by local farmers, have now been recognised as internationally important under the European Habitats Directive and are classed as Mesotrophic Grassland Type 3 (MG 3) under the National Vegetation Classification. Most are protected as SSSIs and their maintenance is encouraged by Environmentally Sensitive Area (ESA) status.

Amongst the other SSSIs in the Area are Semer Water, one of the few natural lakes in the Pennines; a number of ancient woodlands including Freeholders Wood in Aysgarth, and Hack Fall Wood; Ripon Parks, a complex of habitats including grassland, scrub and riverine shingle banks. A large area of the head waters of the River Swale is within the Mallerstang - Swaledale Head SSSI, by far the largest site so designated in the Area.

No SSSIs are designated along the River Ouse upstream of York which reflects the intensive agricultural land use, but sites such as Clifton Ings and associated ings support important flood meadow communities, similar to the Derwent Ings (which are internationally important). See 5.6.1 & 6.5.

2.5.2 FISHERIES

The Swale, Ure and Ouse area has a generally healthy fishery which provides a popular source of recreation (see Figure 14).

The fish populations of the upper River Swale consist mainly of native brown trout in the main river and most of the tributaries. The majority of the grayling of the River Swale occur between Richmond and Maunby.

Coarse fish first occur in numbers below Richmond. Relatively large populations of barbel and chub for example, occur in the Brompton-on-Swale area. Dace are present in low numbers and it is reported that this species was more numerous in the past, although evidence for this view is scant. Common bream have been introduced to the rivers in recent years and there are reports of angling capture of this species. Predatory species such as perch and pike are present in low numbers throughout the lower river. Gudgeon and roach are found particularly near its confluence with the River Ure and in the stretch above Topcliffe weir. There are significant populations of coarse fish in some of the major tributaries, such as Cod Beck and Bedale Beck.

Minor species such as bullhead, stone loach, minnow and 3-spined stickleback occur in varying numbers throughout the river, with the former two species being mainly found in the upper river, the latter two in the lower river and slower moving tributaries.

Considerable populations of brown trout are present upstream of West Tanfield in the River Ure and tributaries. Natural recruitment maintains stocks in most of the tributaries whilst populations in the main river are supplemented by stocking of takeable fish to enhance angling catches, predominantly around Hawes, Bainbridge, West Tanfield and Mickley.

Salmon parr have previously been stocked into the River Ure as part of a rehabilitation project, and recently naturally recruited juveniles have been recorded in a few tributaries and in the main river downstream of Aysgarth, where the falls act as an upstream barrier to migratory salmonids.

Grayling are found in the River Ure between Hawes and Ripon but occur most abundantly in the Redmire and Middleham areas.

Coarse fish are more numerous downstream of West Tanfield although significant numbers occur around Middleham, with Redmire Force being the upstream limit of their distribution.

Chub are prolific throughout the coarse fish zone, with barbel and dace being relatively common. Bream, roach and perch are common below Ripon. Eels are plentiful below Mickley. Small species of little angling interest such as bullhead, minnow and stone loach are found throughout most of the Ure area.

The River Ouse supports an abundance of coarse fish with 18 species recorded. It also acts as the major corridor for salmon entering the catchment, and more recently has seen the return of sea lampreys after an absence of over 50 years. See 5.6.2 & 6.5.

2.5.3 HERITAGE

The Swale, Ure and Ouse area has a rich and varied history with tens of Scheduled Ancient Monuments (SAMs) within the area and hundreds of unscheduled ones.

Sites include prehistoric henges on the River Ure; Roman towns and forts throughout the area and medieval castles and abbeys, and include Jervaulx Abbey and the World Heritage Site at Fountains Abbey. York possesses a wide range of archaeological remains, some of which are of outstanding importance. There are several large estates and parklands throughout the area. See 5.6.3.

2.6 KEY DETAILS

Area: 3,286 km²
 Estimated Area Population: 250,000

Administrative Details

County Councils: North Yorkshire

Unitary Authorities: East Riding of Yorkshire
 Leeds City
 York City

District Councils:	Eden	Richmondshire	Teesdale
	Hambleton	Ryedale	
	Harrogate	Selby	

Water Companies: Northumbrian Water Ltd
 Yorkshire Water Services Ltd
 York Waterworks Company Plc

National Parks: Yorkshire Dales

Navigation Authorities: British Waterways - Ripon Canal, Selby Canal, Ouse and Ure
 Linton Lock Commissioners - Linton Lock
 York City Council - Foss only

Internal Drainage Boards:	Acaster	Kyle and Upper Ouse	Selby
	Bedale and Upper Swale	Lower Ouse	South Wharfe
	Claro	Lower Swale	Wiske
	Cod Beck	Marston Moor	
	Foss	Ouse and Derwent	

AREA INFORMATION (1995)

INDUSTRY

Total Number of IPC Authorisations	16
Number of IPC Sites	8
Total Number of Radioactive Substances Authorisations	3
Total Number of Radioactive Substances Registrations	34

WASTE ARISING

Number of Waste Management Licences	63
Number of Licensed Waste Carriers	100 (approx.)
Total Waste Arisings	750,000 tonnes

WATER QUANTITY

Total Number of Licensed Surface Water Abstractions	590 (1996)
Total Number of Licensed Groundwater Abstractions	413 (1996)
Total Volume of Authorised Abstractions	30,108 thousand cubic metres per annum

WATER QUALITY

Total Number of Consented Sewage Discharges	1,875
Total Number of Consented Industrial Discharges	47

FLOOD DEFENCE

Length of Raised flood Defences on Main River	244 km
Number of People and Property Protected	6600 House Equivalents

ECOLOGY AND FISHERIES

Section 30 Consents to Introduce Fish (1995)	155
Number of SSSIs	55
Number of AONBs	2

3.0 PROTECTION THROUGH PARTNERSHIP

3.1 INTRODUCTION

The Agency is well placed to influence many of the activities affecting the environment through the Environment Act 1995 and other legislation. This section provides the opportunity to address longer term management issues in partnership with others.

The Agency must work in partnership with others to ensure that the actions mentioned in Section 4 are implemented and that the key objectives and the long term vision can be realised. The Agency is working closely with local authorities in particular to ensure that this happens. Dales Area also seeks to increase the number of partnership opportunities with statutory and non-statutory groups to carry out improvement projects and develop a wider public awareness of environmental issues.

The following organisations are included in the issues and proposals (Section 4) :-

British Waterways	Otters and Rivers Trust
The Coal Authority	RJB Mining
English Nature	Tidy Britain Group
Foss Environmental Liaison Group	York Waterworks Company
Internal Drainage Boards	Yorkshire Dales National Park
Ministry of Agriculture Fisheries and Food	Yorkshire Water Services
North Yorkshire County Council	

Partnership proposals are also welcomed from other organisations.

A full list of organisations involved in the preconsultation stage of this document can be found in Appendix C.

3.2 EDUCATION

Good awareness of educational issues is of paramount importance for all successful environmental management. The Environment Agency will seek to educate and influence individuals, groups and industries to promote best environmental practice. It will work in partnership with statutory and voluntary groups to carry out improvement projects and develop a wider public awareness of environmental issues.

The Agency will work with schools and other educational establishments to develop in our children an ethos of caring for their whole environment (see issue 1).

3.3 KEY PARTNERSHIPS

Introduction

This section covers the role of local authorities in relation to land use planning, air quality, waste management and flood defence. It also recognises some of the key groups and organisations which play an important role in protecting the local environment.

Development Planning

Land use is the single most important influence on the environment. It follows therefore that land use change has important implications for the environment which can be both positive and negative. Land use planning is administered by county, district and unitary planning authorities. In addition the area has one National Park, the Yorkshire Dales National Park, which has planning powers. Control of land use change is achieved through implementation of the Town and Country Planning Acts and a range of Government planning guidance. This guidance highlights the importance of communication between local planning authorities and the Agency and the relationship between land use and the environment.

The Agency is committed to developing close working relationships with local planning authorities (LPAs) to promote effective links between planning and environmental protection. Planning liaison is the link between the Agency's functions and local authority planners. See 5.1.1.

Development Plans

Regional Planning Guidance for Yorkshire & Humberside (RPG12) was issued by the Department of Environment (DoE) in March 1996 after consultation with, amongst others, the local planning authorities and one of the Agency's predecessors, the NRA. It sets out the following broad objectives for the area:

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

County council structure plans, district council local plans and unitary authority development plans must be produced by planning authorities. They set out the council's land use objectives and are prepared in accordance with the RPG. These plans provide a framework for land use change and are a key consideration in the determination of planning applications. The Agency is a statutory consultee for all of these plans which allows its views to be considered by the councils when formulating local development plan policies and allocating land for development.

Development plans guide future development. Through the consultation process the Agency encourages LPAs to adopt policies which protect the environment from any of the potentially harmful effects of development.

In addition to the above plans county councils also prepare a Minerals Local Plan and a Waste Local Plan. The Minerals Local Plans indicate areas where provision is made for mineral workings and the requirements for the restoration and aftercare of such sites. The Waste Local Plan can be an integral part of the Minerals Local Plan or a "stand alone" plan.

The NRA produced a set of statements in its document "Guidance Notes for Local Planning Authorities on the Methods of Protecting the Water Environment through Development Plans. These statements provide a general guide to LPAs on which policies should be included in the various plans and why they are important. This guidance will be updated by the Agency.

Development Control

The Agency is also a statutory consultee on certain categories of planning application and councils have discretionary powers regarding the referral of other matters. This allows the Agency's views to be considered by the council prior to planning applications being determined however the planning system should not be seen to duplicate the controls which are the statutory responsibility of other regulatory bodies.

It is primarily land use change in the long term, and the opportunities presented by redevelopment which will help to tackle the issues of urban run-off, contaminated land and the renewal of river corridors. Partnerships at the local level with LPAs include promotion of river bank erosion control with the Yorkshire Dales National Park and North Yorkshire County Council.

Local Agenda 21

Agenda 21 was one of four main agreements signed at the Earth Summit at Rio by representatives of 150 countries including the UK government. It is intended to be:-

"A comprehensive programme action needed throughout the world to achieve a sustainable pattern of development for the next century"

Agenda 21 includes initiatives to further the concept of sustainability and includes waste management issues and promotion of environmental awareness. In 1994 the Government produced a national sustainable development strategy and action plan for the UK. At the local level, most local authorities are working with local communities to produce their own Local Agenda 21 programmes, to promote sustainable development and to improve quality of life.

The Agency recognises the potential of Local Agenda 21 and will continue to work with local authorities to ensure protection and enhancement to improve the local environment. LEAPs provide proposals for action which can feed directly into Local Agenda 21 Action Plans.

The 5 key stages in Local Agenda 21 are :

- To integrate the aims of sustainable development into all aspects of EA work
- To raise the awareness of local issues in relation to their local, regional, national and global impact
- Measure, Monitor and Report on the progress of actions, through the use of environmental indicators
- Develop lasting partnerships with other organisations and agencies
- Involve all sections of the community

Local Community

The community has its own aspirations of what it wants from its environment. In order to protect the environment, the Agency needs the support of the community to tackle issues such as litter, pollution, environmental protection and enhancement. The role of the community within Local Agenda 21 work is not underestimated and will be encouraged by the Agency when, and wherever possible.

Air Quality

Local authorities' environmental health departments regulate air pollution from thousands of industrial premises under Part I of the Environmental Protection Act 1990. These are premises with generally a lesser potential to pollute than those the Agency regulates. The processes concerned are known as Part B processes and only the releases to air are controlled. Local authorities will be required to review present and future air quality against air quality standards and objectives prescribed in regulations made by the Government. Reviews are in the form of Local Air Quality Plans for which the Agency will be a consultee. The Agency will look to produce an Air Quality Strategy for Part A processes in the Swale, Ure and Ouse area which will input into Local Air Quality Plans (see Issue 12).

Waste Management

Local authorities are the key partners within the waste management system and, as the planning authority, determine the location of waste management facilities in accordance with policies contained in the waste local plan, county structure plan and local development plan. They are instrumental in determining regional waste management requirements. It is essential that the Agency continues to work closely with planning authorities in order to further the concept of sustainable waste management.

The land use planning system also has a role to play in the provision of waste

management facilities. It identifies the need for any facility and has regard to its likely impact both on the environment, in terms of traffic generation, and on local amenity through visual intrusion, litter, dust, noise, odour and vibration. It considers the adverse effects on wildlife, conservation and future development together with the benefits to be gained from, for example, the restoration of former mineral workings or the reclamation of derelict or contaminated land. The proposed after-use of the site is also of paramount importance, hence the planning system ensures that only environmentally acceptable proposals are pursued.

Flood Defence

The Agency has specific powers relating to 'main rivers' which enable it to carry out maintenance and improvement works, to construct flood defences and to control the work of others. The Agency has a general supervisory duty over all flood defence matters which requires working in close partnership with other drainage authorities. In addition to works on 'main rivers' the Agency also has regulatory powers to control weirs and culverts which would affect flows on ordinary watercourses.

Local authorities and, in this area, Internal Drainage Boards (IDBs) are responsible for flood defence on 'ordinary watercourses'. The appropriate legislation relating to ordinary watercourses is to be found in the Land Drainage Act 1991.

Within the Swale, Ure and Ouse area there are 13 IDBs, illustrated in Figure 12. These were set up following the Land Drainage Act (LDA) 1930, to deal with specific drainage problems in relatively low-lying agricultural areas and still carry out this work today.

The powers of the IDBs and the Agency are clearly defined by the Land Drainage Act 1991 and the Water Resources Act 1991. Within an Internal Drainage District the IDB supervises all matters relating to land drainage. These powers do not extend to any 'main river' within an Internal Drainage District. Agency staff work in partnership with the IDBs to assist them with promoting more environmentally sensitive management practices. Local authorities have similar responsibilities for non-main river watercourses in their area.

Memoranda of Understanding/Accords

The Agency has a number of Memoranda of Understanding with other groups and organisations which include: English Nature, local government, the Health and Safety Executive and RJB Mining. These establish a mutual understanding and common purpose in partnership with the Agency.

The Agency has signed an Accord with the association of National Park Authorities which sets out the commitment and shared objectives of the parties.

4.0 ISSUES AND PROPOSALS

Throughout the preparation of this Consultation Report a number of issues, objectives and proposals have been identified which require consideration by all those interested in the future of the Swale, Ure and Ouse area. These have been identified by:

- comparing the current state of the local environment targets with national and regional ones (see Section 6);
- informal consultation with selected organisations;
- considering pollution incidents and complaints;
- using local knowledge of Agency staff.

The objectives and proposals presented are the initial views of the Environment Agency and do not constitute policy statements. *Comments on the objectives and proposals are requested together with any new ideas/suggestions.*

Each issue will be presented in the following format:

ISSUE	-	What the perceived problem is.
Background	-	Why we believe it is an issue to be addressed.
Objective	-	What the proposals seek to achieve.
Proposals	-	Proposals which could be developed to address the objectives.

Detailed Action Plans, noting costs and timetables, will only be established after the consultation phase.

Each issue must not be viewed in isolation, since the issues all contribute towards a single vision - the future environmental well-being of the Swale, Ure and Ouse area.

Policies and objectives contained within this document may be subject to change in line with the Agency's altered priorities and the availability of funding.

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Issues, Objectives and Proposals

ISSUE 1

Education on the importance of environmental protection and enhancement.

Background

One of the most important ways in which the Agency can have an effect is by raising the awareness of environmental issues and new legislation, thereby changing attitudes. This can best be achieved by working with operators and customers to educate them as to how the changes affect them, how to minimise the financial burden and maximise the benefits of such changes.

Objective

Promote an understanding of environmental protection and the need to comply with regulations to protect the environment.

Proposals

- Expand existing initiatives to increase awareness of the need to comply with Duty of Care (DOC) and carrier registration regulations throughout the Swale, Ure and Ouse area by: undertaking further producer visits and audits of industry, through liaison with waste carriers and waste disposal site operators and by identifying the nature of non-compliance with existing legislation, eg. poor description of wastes for disposal on Controlled Waste Transfer Notes (CWTN). See 5.2.1.
- Encourage industrial site operators to set up training events to educate their staff on the importance of environmental awareness and improvements. See 5.2.2.
- Support, hold and promote educational events and seminars regarding all the functions of the Agency. Attend shows and events. Provide talks to schools and education packs to teachers. See 3.2.
- Include a proposal to establish a visitor centre at the Foss Barrier to promote the aims and objectives of the Agency (through use of permanent displays, CD ROM facilities, course notes and a lecture theatre) as part of the bid to mark the Millennium. See 3.2.
- Produce an education pack based on the LEAP document and target key stages 1 & 2 in schools in the Plan area. See 3.2.
- Actively promote an understanding of the value of water in the Plan area through the 'Save water save our rivers' campaign. See 3.2.

ISSUE 2

Impact of future development on the environment.

Background

The Agency is taking a pro-active role in the land use planning process. This involves advising local planning authorities and developers on matters concerning air quality, the water environment and waste management. Development has a major influence on shaping an area. New development must be considered carefully to recognise both the potential adverse effects, as well as the potential benefits.

Objective

Seek to ensure the Agency's interests are taken into account through the planning process.

Proposals

- Assess the effectiveness of planning comments made by the Agency through monitoring planning application decision notices. See 3.3 & 5.1.1.
- Monitor effectiveness of comments and recommendations made by the Agency in local authority and Yorkshire Dales National Park development plans. See 5.1.1.
- Ensure that the Agency's Local Environment Agency Plans (LEAPs) are made available to all interested parties. Seek to ensure that the concept of integrated local Environment Agency planning is taken forward by all relevant organisations. See 1.2.
- Minimise the environmental impact of any hydropower schemes in the catchment (proposed schemes at Mickley and Linton Lock) by ensuring that the range of potential impacts is considered at an early stage and modifications/mitigation measures are incorporated as necessary. Monitor ecological effects, especially on fish.
- Section 105 surveys of flood vulnerable sites on watercourses will be prioritised and then undertaken based on the prioritised programme. See 5.1.1.

ISSUE 3

Working with others for the benefit and appropriate enjoyment of the environment.

Background

A number of initiatives have been started by the Agency and others that aim to improve the local environment and its enjoyment by the public. It sees strengthening existing working relationships and forging new ones, through interaction with the public, as the way forward. Many proposals under other issues also require collaborative working.

Objective

Work with organisations in order to improve the local environment and its appropriate enjoyment by the public.

Proposals

- Work with the Agency Rural Land Use Group and bodies such as MAFF, to promote schemes of benefit to the environment, e.g. the Countryside Stewardship Scheme; such schemes will also benefit the land owner. See 5.1.5.
- Work with Yorkshire Dales National Park, North Yorkshire County Council and landowners to encourage the use of soft engineering techniques to help combat erosion and tipping problems. See 3.3 & 5.6.2.
- Support the development of the Trans-Pennine Trail. Encourage improvement of facilities, and foster a balanced approach in the development of access to the countryside by participation in users' forums and consultative groups. See 5.5.2.
- Continue involvement with the Foss Environmental Liaison Group as a means of co-ordinating activities along the river to achieve environmental protection and improvements.
- Look for opportunities to establish wildlife reserves at industrial sites by encouraging operators to take an interest in the concept and arranging for advice on how to do so. Agency inspectors will actively promote work already undertaken by some operators in this respect. See 5.1.2.
- Assist applicant groups, including City of York Council and Yorkshire Dales National Park, with the compilation of funding bids and participate in resulting action plans likely to have environmentally beneficial outcome in the Plan area.
- Actively participate in local authority Local Agenda 21 Action Plans. See 3.3.

ISSUE 4

Pollution from rural land uses and farming.

Background

Farming and other rural activities are of major economic importance in the Plan area but also have the potential to cause pollution, for instance from numerous slurry stores, silage clamps, sheep dips, oil and chemical stores.

Objective

To reduce the environmental impact of activities with a potential to pollute.

Proposals

- Continue to utilise chemical and biological sampling and other data to target subcatchments where water quality is being affected by agricultural pollution, including sheep dip, particularly in upland areas. See 6.4.
- Continue the programme of farm visits to advise on best practice such as MAFF's Codes of Practice on the protection of air, water and soil, and on waste minimisation. Promote schemes for termination of remaining farm effluent discharges, reduction of pesticide usage and landspreading of waste. Sub catchments identified for farm campaigns are the River Wiske, River Kyle and Brompton Beck. See 5.1.5.
- Assess the incidence of EC Drinking Water Directive pesticide standard exceedences within the Ouse potable supply catchment and develop a strategy for reducing these exceedences. Recently developed predictive models will be utilised.
- Control any identified misuse of pesticides and sheep dip likely to impact on water quality by rigorous enforcement. Use existing mechanisms for influencing approvals where legitimate use is causing problems. See 6.4.
- Evaluate the success of the farm pollution campaign by biological and fisheries surveys identifying localities requiring follow up visits. See 5.2.2.
- Ensure that landspreading of waste (including abattoir and food processing waste) does not cause pollution of the environment and is in accordance with best practice and the terms of the relevant exemption from waste management licensing. See 5.2.1.
- Assess the impact of free range pigs on surface waters in the area by means of pro-forma questionnaires and site visits. See 5.1.5 & 5.2.2.

ISSUE 5

The impact of mining on the environment.

Background

Mining has been a significant activity in the area for many years. Subsidence associated with mining may result in reduced levels of flood defence. In recent years there has been a rationalisation of the industry leaving a number of redundant mines which represent a possible source of pollution.

Objective

To ensure that mining activities do not increase the risk of flooding to people and property, that pollution is effectively controlled and that any mitigation measures further conservation.

Proposals

- Raise floodbanks at Wistow/Cawood Ings, Riccall Ings and Barlby prior to subsidence occurring in order to maintain the existing standard of defence. Works to be funded by RJB Mining. See 5.4.
- Continue to monitor RJB Mining's activities in the area, including related subsidence and its effects. See 5.4.
- It is possible that the risk of flooding at Acaster Malbis and/or Acaster Selby will be affected by mining subsidence. The possibility of a jointly funded flood alleviation scheme will be investigated. See 5.4.
- Investigate the potential impact of mine extensions and closures within the Selby coalfield on the ecology of the water environment and develop a strategy for the limitation of any damaging impacts. See 5.4.
- Improve water quality in Selby Dam by negotiating direct discharge of the one remaining minewater not discharging to the tidal River Ouse. See 5.4.

ISSUE 6

Operational standards, waste minimisation and best practice.

Background

Optimisation of standards and processes can assist in minimising environmental impact. Waste minimisation can reduce costs, limit the amount of waste disposed of and produce benefits for both industry and the environment. Best practice can lead not only to better protection of the environment but also to savings for industry. In the past there has often been a tendency to concentrate on production areas with the result that standards in less high profile areas, such as storage and drainage systems, have fallen behind what is now best practice.

Objective

Encourage recycling and waste minimisation.

Proposals

- Identify waste which is suitable for recycling and determine sources of waste and recycling facilities. Establish with local authorities, industry and other organisations what recycling initiatives are in place. Promote recycling of waste at disposal facilities, e.g. the screening and crushing of construction wastes. See 5.2.1.
- Assist operators of metal recycling sites to find outlets for waste fluids by providing details of new recycling processes for these. See 5.2.1.
- Identify companies and/or industrial estates where recycling or waste minimisation can be encouraged. Target companies or industrial estates to encourage recycling and waste minimisation initiatives. See 5.2.1.

Objective

Promote best practice and improve operational standards.

Proposals

- Work with operators to reduce gaseous emissions from landfill by exploring the opportunities for energy production from landfill gas. See 5.2.1.
- All Part A process operators to be contacted and the "3 Es" (Emissions, Economics and Efficiency) process explained. Support in implementation to be offered. Training workshops to be arranged to allow operators to understand the process, realise potential benefits and see the benefits that have already been accrued by other operators. See 5.1.2.

- The standards of storage areas (tankage, bunds, piping etc) and drains (underground pipework, road drainage, storage pits, etc) of Part A processes will be reviewed. Where found to be below acceptable standards an improvement programme will be agreed with the operator.

ISSUE 7

Loss of biodiversity.

Background

The United Kingdom Government signed up to the Biodiversity Action Plan at the Rio Summit in 1992 in recognition of the global threat to biodiversity. The Agency is the contact point for twelve species and one habitat (chalk streams) and has undertaken to draw up Action Plans for 8 of these species, for 3 additional species from the biodiversity short list and for chalk streams.

Objective

Promote the aims of the UK Biodiversity Action Plan.

Proposals

- Support both otter projects e.g. Otters & Rivers Project and research to investigate otter distribution and factors influencing it. See 5.6.1 & 6.5.
- Determine the status of water voles in the area. See 6.5.
- Assist in the collection of data on aquatic species covered by the UK Biodiversity Action Plan but for which the Agency does not have a specific role. See 6.5.
- Maintain records of native crayfish in order to monitor changes in distribution. See 6.5.
- Monitor the status of salmon stocks, identify factors affecting the rate of recovery and formulate an action plan to aid recovery of stocks.

ISSUE 8

Identification, minimisation and mitigation of man's impact (other than pollution) on aquatic flora and fauna.

Background

There are many adverse effects on the environment which arise other than from pollution, for example, soil and riverbank erosion due to poor land management practices and obstacles to fish movement because of weirs.

Objective

Assess and where possible mitigate man's impact on the environment.

Proposals

- Work with land owners, involving the Farming and Wildlife Advisory Group, to find better alternatives to continuing practices of environmentally unfriendly erosion control or land drainage, suggest suitable restoration measures and distribute booklets on Understanding Riverbank Erosion. See 3.3 & 5.6.2.
- Prioritise works to be carried out following the completion of an inventory of man-made obstructions, and make proposals to improve the passage of fish. See 5.6.2.
- Examine possible causes for changes in patterns of angling catches in the rivers Ure and Ouse and recommend measures to improve them if necessary.
- Remove natural obstructions to spawning movements of fish caused by accumulated materials, e.g. gravel shoals near the mouth of Apedale Beck. See 5.6.2.
- Assess the extent of fish entrainment and damage at Boroughbridge Pumping Station and recommend further detailed study if possible improvement measures are identified. See 5.6.2.
- Examine rivers for signs of fish after floods. Investigate the possibility of undertaking works at Beningbrough Hall which would reduce the problem of fish stranding. See 5.6.2.
- Investigate the amelioration of low flows in the River Foss.
- Work in partnership with English Nature and MAFF to assess the impact of moorland gripping on river hydrology and sediment processes.

ISSUE 9

Effluent discharges to the rivers Swale, Ure and Ouse.

Background

Maintenance and improvement of the water quality in, and the environment of, the rivers Swale, Ure and Ouse is of strategic importance to the County of North Yorkshire and beyond. Rivers are the major source of drinking water for York and large volumes of water are abstracted from the Rivers Ure and Ouse for distribution from the grid system to other parts of Yorkshire.

Objective

Protect and improve the water quality of the rivers Swale, Ure and Ouse.

Proposals

- Ensure that Yorkshire Water Services Ltd (YWS): completes the provision of improved treatment required under the EC Urban Waste Water Treatment Directive (UWWTD) and Fisheries Directive; provides extra treatment to achieve River Quality Objectives (RQOs), funded by the National Environment Programme, at Naburn (York) STW, and at the following sites required by the UWWTD alone. See 5.2.2 & 6.4.1:

Northallerton STW
Romanby STW
Walbutts (York) STW
Selby STW
Barlby STW
Fulford storm balancing station

- Ensure that, wherever possible, sewage discharges not within the scope of the UWWTD are upgraded where improvements in water quality or amelioration of localised chronic impacts are needed. See 5.2.2.
- Identify priorities for improvements to unsatisfactory Combined Sewer Overflows (CSOs) to be funded by the YWS capital programme in AMP2/AMP3. See 2.4.1 & 5.2.2.
- Ensure that STWs identified in AMP3 (of between 2000 and 15000 population equivalents) are improved where necessary to meet the UWWTD. See 6.4.1.
- Implement sampling regimes to identify the source of vanadium in the tidal River Ouse as this is currently above the Environmental Quality Standard level and if appropriate, take measures to reduce vanadium inputs in this river. See 5.2.2.

- Determine a realistic water quality target for the tidal River Ouse, prepare a strategy for achievement of the objective and implement it by requiring reductions in Biochemical Oxygen Demand (BOD) load from the Selby group of industrial and sewage discharges. See 6.4.1.

ISSUE 10

Intermittent threats to water quality.

Background

There have been a number of pollution incidents in the area resulting from industrial spills, road tanker crashes and farm slurry spills. Threats from these and many other sources can affect drinking water supplies and are potentially extremely damaging to the environment.

Objective

Adopt precautionary measures to prevent pollution incidents and maintain an effective emergency service to mitigate their impact.

Proposals

- Review procedures to deal with pollution incidents and further develop the use of time of travel flow forecasting to assist in safe operation of potable supply intakes on rivers. See 5.2.2.
- Ensure that all contractors employed to mitigate the impact of pollution incidents involving oil spillages are registered by the Environment Agency/British Oil Spill Contractors Association Accreditation Scheme. See 5.2.2.
- Develop emergency response files for trunk road drainage systems where spillages could potentially affect potable supply intakes. See 5.2.2.
- Undertake phased investigations on industrial sites and recommend pollution prevention measures. See 5.2.2.

ISSUE 11

Justification and observance of the conditions of radioactive substances licences.

Background

The use and disposal of radioactive substances within the Swale, Ure and Ouse area requires justification and is controlled by certificates issued by the Agency under the Radioactive Substances Act 1993.

Objective

Review the use of radioactive materials to ensure that there is sufficient justification and that operators understand and observe the conditions of their licences.

Proposals

- Carry out a review of the authorisations and registrations issued under the Radioactive Substances Act 1993, with particular attention to justification (of use and number/activity of sources employed). See 5.1.3.
- Check that not only are the requirements of the certificates being observed, but that operators understand the reasons for the requirements. See 5.1.3.

ISSUE 12

Air pollution and acidification

Background

Air quality is the responsibility of local authorities. The Agency has a specific remit to regulate releases from Part A processes and will liaise with local authorities to ensure that Agency regulated strategies are complementary to local air quality objectives. Acidification in the form of acid rain arising from air pollution can affect flora and fauna as well as affecting watercourses.

Objective

Develop an air quality strategy for Part A processes in the Swale, Ure and Ouse area.

Proposals

- Generate an air quality strategy for Part A processes which complements local authority and national air quality objectives and strategies. See 2.2.1.
- Encourage local authorities to develop a database of Part B processes. See 2.2.1.

- Assess the relative impact of Part A processes on the environment. See 2.2.1.
- Assess the environmental impact of large combustion plants within this and adjoining Local Environment Agency Plan areas and consider what actions may be appropriate to minimise the impact, particularly in adverse weather conditions. See 2.2.1 & 5.1.2.

Objective

Assess the impact of acidification in the area.

Proposals

- Determine the impact of acidification on the aquatic ecosystem in tributary streams of the River Swale at Whitsundale, Birkdale, Arkle and Marske Becks and of the River Ure in the rivers Burn, Cover and Skell and assess whether measures to ameliorate impacts are required and are practicable. See 5.6.2 & 6.2.1.

ISSUE 13

Risk of flooding to people and property.

Background

Historically development has been centred on the area's rivers which provided a route for communication and a source of water. Where development has taken place in the natural flood plain, properties will be at risk from flooding unless works are undertaken to reduce this risk. It is not practicable, cost effective or environmentally acceptable to protect all vulnerable properties. However, where the Agency's powers and funding permit, it will undertake a priority based programme to provide effective protection for people and property against flooding. This is achieved by the construction and maintenance of flood defences and through the provision of effective and timely warnings.

Objective

Provide and maintain flood defences and a timely, reliable and accurate flood warning service.

Proposals

- Investigate the feasibility and, if appropriate, the options for increasing the standard of flood protection to the Lower Dunsforth, Boroughbridge, Milby, Naburn, Ripon and Catterick areas. See 5.4 & 6.4.3.

- Undertake a feasibility study of the options available for replacing the ageing defences at Selby. The study will take into account the effects of rising sea levels. See 5.4 & 6.4.3.
- Carry out further consultation in order to determine whether there is support for a flood defence scheme at South Esplanade, York. See 5.4 & 6.4.3.
- Continue a programme of erosion prevention on the tidal River Ouse. Work mainly involves the placing of large stones from a barge, and the programme is agreed each year with English Nature. See 5.4.
- Consider the feasibility of installing a river level recorder and telemetry, linked to the region's Regional Telemetry System, on the River Ure at Ripon. See 5.4.

ISSUE 14

Water resources management and the impact of the drought.

Background

A lack of rainfall over recent years has resulted in greater demand for water from the rivers Ure and Ouse. This situation is unprecedented in recent times and we will need to review our current knowledge and understanding of the river system both during and after such an event. The Agency will continue to respond to the short term problems with water supplies and will formulate a long term strategy to ensure shortfalls in resources are resolved with minimal environmental impact. The Tees transfer scheme is of particular significance in the Plan area and requires a comprehensive assessment of the impact of transferring water between river systems.

Objective

Ensure the proper management and development of surface water resources in order to protect both the water resource and the environment.

Proposals

- Ensure YWS and York Waterworks reduce leakage from water supply grids to acceptable levels and promote water conservation measures which will minimise existing abstractions from the rivers Ure and Ouse and closely monitoring future possible use of the Tees transfer pipeline. See 6.4.2.
- Determine the environmental implications of the Tees transfer options by ensuring that YWS carries out the required comprehensive environmental assessment. This includes detailed environmental monitoring of water quality, flows, ecology and fisheries and will allow the Agency to evaluate the likely environmental impacts of the Tees transfer options and to identify the issues

associated with this potential development proposal. See 6.4.2.

- Assess the effects of different flow and water resource regimes on the ecology of river communities by utilising existing R & D information, and available data to report on the impact of low flows in the Swale, Ure and Ouse catchment. See 6.4.2.
- Ensure completion of the joint (YWS and the Agency) programmes of monitoring, evaluation and reporting of data for both time limited licences and drought-order conditions for abstractions from the River Ouse at Moor Monkton and the River Ure at Kilgram Bridge. See 6.4.2.
- Ensure that YWS carries out improvements to the fish pass at Naburn weir in fulfilment of drought order conditions. See 6.4.2.
- Install fish counter at Naburn to monitor effectiveness of fish pass improvements and fish movements in relation to flow and water quality in the tidal River Ouse. See 6.4.2.
- Assess the impact of the installation of screens on fish mortality at Moor Monkton and Kilgram intakes. See 6.4.2.

ISSUE 15

Protection of the groundwater resource.

Background

Groundwater is a vital source of water both for drinking water supplies and for providing base flow for the area's rivers. Groundwater is particularly at risk from distributed and diffuse sources of pollution which accumulate over many years. These waters may be virtually impossible to clean up, even when the source of the problem is removed. The protection of groundwater quality and yield is therefore of paramount concern.

Objective

Protect the quality and quantity of the groundwater.

Proposals

- Continue with the Agency's programme of defining groundwater source protection zones for the major groundwater abstractions in the Plan area that are used for potable supply, (including the YWS abstractions at Lower Dunsforth, Ainderby Steeple, Angram and Studforth). See 5.3.2.

- Implement the Agency Groundwater Protection Policy through promotion to planning authorities, landowners and dischargers within the Plan area. See 5.3.2.
- Establish baseline groundwater quality for the Sherwood Sandstone and Magnesian Limestone aquifers in the Plan area by examining the results obtained through sampling, from the groundwater quality monitoring network. See 5.3.2.

ISSUE 16

Pollution from waste going to land.

Background

The main method of disposal of waste is to landfill sites. It is vital that the impact of waste disposed of in this way is understood, and that the environment is fully protected from these potential sources of pollution.

Objective

Develop standardised recording systems, collate new and existing data, and improve regulatory practices.

Proposals

- Expand the data available with regard to landfill gas production, surface and groundwater quality at waste sites. See 5.2 & 6.3.
- Compile and analyse total waste arisings for the Swale, Ure and Ouse area using information from waste carriers, collection authorities and disposal facilities. See 5.2 & 6.3.
- Use information collected locally from the National Waste Arisings Survey to compile and analyse total waste arisings for the area. See 5.2 & 6.3.
- Improve liaison with the operators of waste sites where an exemption from waste management licensing has been registered. Develop a supervision and monitoring programme to determine whether exempt activities fall within the terms of the exemption and ensure that pollution of the environment does not occur. See 5.2 & 6.3.
- Improve the effectiveness of supervision of waste sites and industrial processes by developing methods to measure the performance of the waste regulatory function in relation to the Agency's statutory duties. Explore the opportunities to measure the standards of waste site operations. See 5.2 & 6.3.

ISSUE 17

Fly-tipping and nuisance pollution

Background

The impact of the recent landfill tax may result in an increase in illegal tipping of waste. Nuisance pollution (dust, litter, odour and smoke) is often less damaging overall to the environment than other forms of pollution but may cause local offence and concern.

Objective

Target fly-tipping and, in co-operation with other organisations, nuisance pollution arising from licensed facilities.

Proposals

- Improve standards of operation at all waste transfer stations, e.g. by preventing unauthorised burning and ensuring regular clearance of waste from transfer stations. See 5.2.
- Develop strategies and objectives for future regulation of operations and measures for monitoring nuisance relating to waste management activities at waste sites, eg. dust, litter, odour, smoke and noise. See 5.2.
- Work to reduce the amount of illegal tipping in the Plan area by targeting waste producers and carriers. See 5.2.
- Undertake an anti fly-tipping campaign in conjunction with local authorities and the Tidy Britain Group. See 5.2.

ISSUE 18

Maintenance of habitat diversity and protection of those habitats recognised for their importance for particular species.

Background

The diversity of species is an important indicator of the environmental condition of an area. The Swale, Ure and Ouse area is already diverse, and this is recognised in the number of designations imposed on the river and its surroundings. The Agency, where possible, will work to protect and increase the habitat diversity in the area. Fish stocks in particular, are an indicator of environmental well-being as well as providing important recreational opportunities.

Objective

Protect and, where appropriate, increase habitats for fisheries, flora and fauna.

Proposals

- Identify areas where shortage of suitable habitat is limiting fish populations and formulate measures for these areas. See 5.6.2.
- Enhance fish spawning areas and nursery areas through appropriate management, e.g. willow planting, installation of instream structures and cleaning of gravels, and assess effectiveness by pre and post installation surveys. See 5.5.1.
- Fence off, plant trees on the bank and/or install instream fish shelters in the River Swale on five reaches of 5 km length upstream of Morton-on-Swale, and on one reach at Middleham on the River Ure. See 5.6.2 & 5.5.1.
- Provide shelter areas in the Aldborough area of the Ure which will concentrate fish and improve angling catches, working in collaboration with British Waterways. See 5.6.2.
- Install, in collaboration with the Foss Internal Drainage Board (IDB), further instream structures in the River Foss which will increase habitat suitability for fish.
- Identify areas of the River Kyle suitable for habitat improvement and discuss suitable measures with the Kyle and Upper Ouse IDB.

Objective

Balance and integrate the requirements of agriculture, flood defence and conservation.

Proposals

- Produce water level management plans for six sites: Clifton Ings, Linton-on Ouse, Middlethorpe Ings (North and South), River Foss, River Ure grasslands and River Tutt. See 5.4 & 6.4.
- Promote the Ouse Ings Heritage Project to conserve and enhance the wildlife and heritage value of the Ouse Ings in and around York for future generations.
- Survey the flora and fauna of Asselby Island, and draw up a management plan with a view to enhancing floodplain and woodland habitat, including reintroduction of native black poplar. See 6.5.

Objective

Collaborate in R&D projects to gain a fuller understanding of the environment.

Proposals

- The Land Ocean Interaction Study (LOIS) is using the rivers Swale and Ouse for a number of studies and the Agency will continue to collaborate wherever practicable.

ISSUE 19

Impact of pest species.

Background

Certain pest and non-indigenous species may pose a threat to the health, the existing ecology and to the landscape of the Swale, Ure and Ouse area. These species may be adversely affecting the ecology, economy and recreational enjoyment of the area. The Agency will work with other organisations in order to attempt to control these species in an effective and environmentally friendly manner.

Objective

Protect the public and the environment both from harmful pest species and the methods to control them.

Proposals

- Ensure that the use of the herbicide, asulam, for bracken control is undertaken in accordance with current legislation and the Agency's requirements. See 5.6.1.
- Collaborate with local authorities and landowners on a programme of giant hogweed control, in particular for the River Ure. See 5.6.1.
- Investigate the spread and impact of non-native crayfish species on the ecology of the area by instigating a programme of surveys above and below sites known to contain them. Produce and implement an action plan designed to protect the catchment from invasion by alien crayfish. See 6.4.1 & 6.5.

ISSUE 20

The impact of the European Directive on IPPC with regard to the Agency's regulatory role.

Background

A European Directive on Integrated Pollution Prevention and Control (IPPC) has been passed. This will be brought into UK legislation in the coming years.

The impact upon industry within the area needs to be defined; in particular the regulatory roles of the Agency require identification.

Objective

Identify affected industries and discuss IPPC introduction with them.

Proposals

- Identify affected industry groups and ensure awareness and compliance strategies are in place. See 5.2 & 6.4.
- Assess the role of the Agency within the area when IPPC Directive becomes UK legislation.

PART II

Part II is split into two sections.

Section 5 identifies uses and activities which are prevalent in the Swale, Ure and Ouse area.

Section 6 seeks to measure the environmental quality of the area against identified targets (if available).

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5.1 ECONOMIC

5.1.1 DEVELOPMENT

Background

The broad objective of Local Environment Agency planning is to conserve and enhance the environment through effective land and resource management. While the Agency is well placed to influence some of the factors which impact on the environment, through its regulatory powers, it has little control over the mechanisms which determine land use change. This is largely the responsibility of the LPAs through Town and Country Planning Legislation.

The Agency is a statutory consultee on development plans for categories of development specified in Article 10 of the Town and Country Planning (General Development Procedure) Order 1995 and under Regulation 8(6) of the Town and Country Planning (Assessment of Environmental Effects) Regulations 1988 for planning applications relating to specific types of projects.

In addition LPAs consult the Agency "informally" on other development applications which have potential to have an adverse impact on the environment. However, the final decision on planning matters rests with the LPA.

Local Perspective

The plan area is essentially rural in character. The majority of development activity takes place in the market towns, the Port of Selby and the City of York.

Strategic guidance given in the North Yorkshire County Structure Plan places importance on the need to conserve and protect the County's natural resources and environment. It seeks to balance these objectives with the demand for development and change. Table 1 shows the current status of development plans in the Plan area.

Residential development

Strategic guidance for residential development seeks to reduce the rate of house building from levels experienced in the 1970s in order to relieve pressure on the County's environment. However, there is a need to ensure that sufficient land is made available for housing in the right places. Within the Swale, Ure and Ouse LEAP area the majority of housing development will be located in existing centres of population (see Table 2).

Major residential developments must be served by adequate foul drainage disposal arrangements. PPG 23 "Planning and Pollution Control" states that sewage disposal is capable of being a material consideration in the determination of a planning application. The Agency will advise LPAs where existing facilities are considered inadequate and encourage development to be phased in line with improved infrastructure provision.

Table 1: Current status of development plans in the Swale, Ure and Ouse area (at time of going to print)

Local Authority	Title of Plan	Current Stage
County Councils		
North Yorkshire	County Structure Plan Alteration No.1 Alteration No.2 Alteration No.3	Adopted Nov 1980 Adopted Jan 1987 Adopted Aug 1989 Adopted Oct 1995
	North Yorkshire Minerals Local Plan	Deposit Draft, Sept 1995
District Councils		
Ryedale District Council	Ryedale Local Plan	Consultation Draft, April 1995
Hambleton District Council	Hambleton District Wide Local Plan	Deposit Draft, Sept 1994 public local inquiry started Feb 1996
Richmondshire District Council	Richmondshire Local Plan	Deposit Draft Feb 1996
Harrogate District Council	Harrogate District Local Plan	Deposit Draft, June 1995
Selby District Council	Selby District Local Plan	Consultation Draft, June 1995
Unitary Authorities		
York City Council	City of York Local Plan	Consultation Draft, Feb 1994, currently being reviewed
Leeds City Council	Leeds Unitary Development Plan	public local inquiry ended July 1996
East Riding of Yorkshire Council	Covered by Beverley Local Plan and East Yorkshire Local Plan	Planned - East Riding District wide Plan 1996/97
National Parks		
Yorkshire Dales National Park	National Park Plan	Undergoing second review; available for public consultation 1997
	Local Plan	Adopted September 1996
	Minerals & Waste Local Plan	Public local inquiry commenced October 1996

In addition to sites allocated for residential use in local authority development plans, there may be opportunities for small scale infill development. In existing centres these should be connected to the public foul sewer. In outlying, rural areas this may not be practicable.

The Agency will advise LPAs on the suitability of private drainage arrangements. Septic tanks have the potential to pollute the water environment if not adequately installed and maintained. The Agency will request planning conditions where appropriate, to ensure that the environment is protected.

Table 2: Significant housing land allocations

Local Authority	Settlement	No. of dwellings proposed
Harrogate Borough Council	Pateley Bridge	15
	Masham	25
	Boroughbridge	150
Selby District Council	Selby	1450
	Fulford	670
	Brayton	195
Hambleton District Council	Thirsk	255
	Northallerton	230
	Bedale	90
	Easingwold	160
Richmondshire District Council	Richmond	98
	Colburn	179
	Leyburn	120
York City Council	York	1605

Within this LEAP area there are a number of villages which have only rudimentary sewerage and sewage disposal facilities, resulting in pollution to local watercourses. The Agency is in close liaison with LPAs to ensure development takes place in line with infrastructure improvements. The Agency has developed pollution control zones to guide LPAs (see Figure 5).

Rural Development

Agricultural activities have the potential to pollute the environment. The Agency enforces the Control of Pollution Regulations 1991 (Silage, Slurry and Agricultural Fuel Oil) to ensure that new or substantially altered farm waste storage facilities comply with defined standards. An important way in which this is achieved is through the planning application consultation process. The Agency will advise LPAs of measures required to ensure the risk of pollution to the environment is minimised.

[illegible]

Figure 5

The current restructuring taking place in agriculture has resulted in pressures for diversification of activities. PPG 7 "The Countryside & the Rural Economy" advises of the need to accommodate employment-generating uses within rural areas. This usually takes the form of the conversion of redundant agricultural buildings and is generally small scale. The Agency seeks to be consulted on such developments as these can impact on the environment through changes to surface water runoff patterns because of the increase in hard surfaces, contamination from surface water runoff and sewage/trade effluent.

The Agency will advise LPAs on the suitability of any proposed foul drainage arrangements. New development should generally be served by new or existing public foul sewerage systems rather than a proliferation of small private treatment plants or septic tanks. However, in isolated rural areas, for small scale development, private drainage arrangements may be acceptable. The Agency will impose conditions, as appropriate, to ensure that septic tanks or cesspools are installed with minimum impact on the environment. The Agency can issue discharge consents for disposal of effluent from private treatment plants under the terms of the Water Resources Act 1991.

Industrial Development

Strategic guidance, set out in the county council structure plan, for industrial development aims to meet the needs of existing employers and the local workforce whilst recognising the need to protect the environment.

Most of industrial development will be located in existing centres. However, policy I15 of the structure plan allows, in exceptional circumstances, large scale business or industrial development for occupation by a single operator, and for any related development directly linked related development would result in substantial employment or other economic benefits. Such developments are likely to be located on green field sites. A full environmental assessment will be required for any proposals.

Industrial and business development in this LEAP area tends to be light industry, distribution and services. These are developments which fall into Classes B1, B2 and B8 of the Use Classes Order and largely fall outside the Integrated Pollution Control regime, but which can have negative impacts on the environment.¹

Industrial developments can result in contaminated surface water runoff which may find its way to local watercourses. The main sources of contamination are:

- spillages of oils and chemicals;
- oil and petrol from hardstandings and storage areas;
- water used for vehicle washing.

¹ B1 Business uses which can be carried out in a residential area without detriment to the amenity of that area; B2 general industrial; B8 storage and distribution.

The Agency will advise/request planning conditions, where necessary, to ensure that hardstandings and parking areas are properly drained, with oil interceptors or trapped gullies as appropriate. Oil and chemical storage facilities must be adequately bunded.

Flood Risk Areas - DoE Circular 30/92 - Section 105 Surveys

It is preferable to avoid increased risk from flooding through control of development rather than to have to carry out works to alleviate problems once they occur. The relevant authority for controlling development in the floodplain is not the Agency but the LPA through the Town and Country Planning Act 1990 process.

Surface water runoff is likely to be increased to some degree as a result of development on more impermeable surfaces, such as roofs and pavements. The impacts of such development, however small, add up and can lead to significant problems in due course. Increases in both the amount and rate of water reaching rivers can, if not managed, lead to greater risk of flooding. The Agency will seek to ensure new development is carefully located and designed. Where appropriate, it will require measures to control surface water to be incorporated into the overall development.

Local planning authorities and the Agency are required by the DoE, in Circular 30/92 on Development and Flood Risk, to liaise closely on flooding and surface water runoff matters. The aim is to ensure that flooding risks that might arise from a development are recognised and made an integral part of the decision making process undertaken by local planning authorities. Flooding and drainage issues are also to be taken fully into account during the preparation of land use development plans. In this respect the Agency has responsibility to prepare surveys under Section 105 of the Water Resources Act 1991 to define the nature and extent of flood risks.

Within the LEAP area, the only watercourse currently programmed for investigation under Section 105 is Swinney Beck at Masham. Consultants have been appointed and produced recommendations for the Environment Agency to consider. The need for Section 105 Surveys on other watercourses or specific reaches of watercourses will be prioritised and a programme established.

Mineral Workings

Within this LEAP area there are a number of mines and quarries (see Figure 8) and there is pressure for continuing expansion. County councils have to ensure that a steady supply of aggregates is available for the construction industry. Mineral workings have the potential to pollute or derogate both surface and groundwaters by reducing groundwater levels which may reduce flows in surrounding watercourses damaging natural habitats. Mineral workings in floodplains, or their subsequent restoration, must not affect the ground level of a site such that the amount of flood storage capacity is reduced.

5.1.2 INDUSTRY

Background

In many areas, some of the older traditional manufacturing industries are under increasing pressure from overseas competition and are experiencing severe cost pressure. This results in the moving towards a smaller number of their more successful products with the abandonment of their less profitable lines. This is no less true of the smaller businesses developing on the light industrial estates, who typically employ small numbers of people without the large support structures of the traditional large employers.

Whilst most industries generally recognise and accept the need to maintain (and indeed to improve continually) their environmental performance, the majority are in situations which make significant financial investment in environmental improvement alone difficult to justify to their shareholders. However, many have environmental improvement programmes in place which are producing significant improvement on a longer timescale. It is now recognised by most developers that new plant construction must be carried out to high environmental standards.

Several of the industries are engaged in waste minimisation studies (looking at ways to minimise the generation of waste by reducing raw material consumption and evaluating by-product uses for the wastes that do have to be generated) whilst a number are considering trialing a new procedure developed jointly by the Environment Agency/Business in the Community called the "3 E's study". This is a methodical way of reviewing in detail each stage of a process with the joint objectives of (a) reducing the overall environmental impact of the process and (b) improving the economics of the process. This has already been used in other areas to good effect and underlines the Agency's approach of looking to improve the environment in ways that are in harmony with developing the economic welfare of the businesses and the community (see issue 12).

Regulation

The industrial activities regulated by the Agency within the area include very large scale power generation and manufacture of chemicals. Pollutant releases from these Part A processes are regulated under Part I of the Environmental Protection Act 1990 (EPA90). The permissions - known as "IPC Authorisations" - include not only limits on the emissions which may be released to air, land, and water but also "improvement programmes" which the operators are required to implement to improve their environmental performance.

Responsibility for overall air quality standards is, in general, the responsibility of the appropriate local authority and is assessed by them using a variety of techniques.

In addition to such local authority air quality monitoring the Department of the Environment (DoE) operates a national network of monitoring stations for air quality but none of these stations is located in the area covered by this LEAP. The nearest

monitoring station is located in Leeds and results from this urban location are not seen as representative of air quality for this predominately rural area (see Issue 12).

Local Perspective

The area is predominantly rural, but with significant pockets of industry in some of the larger towns, and "light industries" estates in many of the smaller towns and villages. By contrast, at the extreme south of the area, the rural village of Drax is home to the largest coal-fired power station in Western Europe. The area also includes the Selby coal field.

The areas of significant industry (see Figure 6) are as below:

Catterick	Whilst not strictly speaking "industry", Catterick is home to a large garrison with its associated staff and services. In release terms the main impact is through a number of consents to discharge to water.
Drax	<p>South of Selby, Drax power station is the largest coal-fired power station in Western Europe. Just outside the area are Eggborough and Ferrybridge coal-fired stations; all three contribute to an environmental impact on a national and international scale.</p> <p>These ESI (Electricity Supply Industry) processes contribute to the national and international issues of acid rain generation and can impact upon local air quality via sulphur dioxide (SO₂), nitrogen dioxide (NO₂) and other releases. The Agency regulates these stations as "Part A" processes (being stations greater than 50 Megawatt output) for releases to air, land and water; Local Authorities regulate those stations below that figure (as Part B processes) but only for releases to air.</p>
Northallerton	The county town of North Yorkshire and location of the county council. Principally a market town but with some larger industry, including cattle feed and paint manufacture, on the edge of town.
Richmond	A typical market town with industry limited to a variety of smaller units at the edge of town.
Selby	The mining of coal from the Barnsley Seam in the Selby coalfield is the most important industry in the area. See 5.1.6. In addition there are a number of mid-size processing units including paper products, leather treatment chemicals and cattle feed manufacture.
York	Home to several large processing industries (including sugar manufacture and food, eg chocolate) and a number of small manufacturing businesses. Perhaps the greatest environmental impact relates to tourism. See 5.1.7.

SWALE, URE AND OUSE AREA COMPANIES WITH SIGNIFICANT DISCHARGES



Figure 6

The area includes the following IPC sites which are regulated by the Agency:

Drax	Drax Power Station
Northallerton	Earnshaws
Ripon	JC Seeds
Selby	Yorkshire Chemicals, Haarman & Reimer
Sherburn-in-Elmet	Linpac Polymers
Thirsk	Gallow Green
York	British Sugar

5.1.3 STORAGE AND USE OF RADIOACTIVE MATERIALS

Background

The term radiation is very broad. It includes visible, infra-red and ultra-violet light. In the context of radioactivity, radiation usually means ionising radiation i.e. radiation which changes the physical state of atoms which it strikes causing them to become charged or "ionised". Atoms which are unstable and can change into another form, and in so doing emit energy as rays or particles, which are radioactive. These atoms are commonly referred to as radionuclides.

The Radioactive Substances Act 1993 (RSA93) provides controls to be exercised over the use and keeping of radioactive materials and the accumulation and disposal of radioactive wastes. An essential part of this regulation is that all such cases must have a "justification" that demonstrates the benefits outweigh the detriments from the use of radioactive material (see Issue 11). The Agency is responsible for administration and enforcement of the Act in England and Wales and this takes the form of registrations (keeping and using radionuclides) and authorisations (accumulating and disposing of radioactive waste).

The Nuclear Installations Act 1965 licenses "nuclear sites" which include nuclear power stations, nuclear fuel fabrication and reprocessing plants. There are none in this area.

Non-nuclear sites include hospitals, veterinary practices, research centres and manufacturing sites. Discharges of radioactive wastes to the environment from these sites may only be made (subject to certain exemptions) in accordance with authorisations issued under RSA93.

Local Perspective

Within the Swale, Ure and Ouse area there are 3 authorisations for accumulation and disposal of radioactive waste, all associated with use within hospitals and universities. There are 24 registrations to keep and use radioactive sources. These are used in such activities as agriculture (for crop flow measurement on combine harvesters), industrial radiography, density measurement devices and vehicle paint spraying activities.

5.1.4 TRANSPORT

Background

Vehicles emit carbon dioxide (CO₂), carbon monoxide (CO), oxides of nitrogen (NO_x), sulphur dioxide (SO₂), lead, particulate materials and volatile organic compounds. Traffic noise is a major nuisance in some areas. Road construction places pressures on the countryside. These are not the direct responsibility of the Agency. Government policy set out in "This Common Inheritance" seeks to control emissions of greenhouse gases which lead to global warming. Central to this concern is the acknowledgement that transport contributes to approximately 20% of Britain's total CO₂ emissions, most of which come from road transport.

National planning policy guidance is set out primarily in PPG12 "Development Plans and Regional Planning Guidance" and PPG13 "Transport". This recognises the need to reduce the demand for transport and to encourage the development of acceptable alternatives to the private car.

Local Perspective

Following a review of the national trunk road building programme, a number of schemes have been removed from the programme or postponed. However, within the Swale, Ure and Ouse LEAP area there are some places where unacceptable levels of congestion have resulted in environmental, economic and safety problems. As a result more road schemes are planned.

Road schemes, which can provide large areas of impermeable surface draining to a single point and discharging into either a watercourse or 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. The Agency will advise where flood compensation schemes and pollution prevention measures are required

The major road scheme within the Swale, Ure and Ouse LEAP area is the upgrading of the A1 to motorway standard. The Agency has liaised closely with those involved in its construction to ensure that the environment is safeguarded.

The A63 Selby Bypass is proposed to relieve congestion around the market town of Selby. The route of the bypass will pass approximately 150 metres from a YWS public supply borehole at Brayton. This borehole is in Sherwood Sandstone overlain with sand. The sandy drift offers no protection from potential pollutants. The Agency has liaised with the project engineers to ensure that drainage systems used for this scheme are designed and installed to ensure that the water resource is protected.

The proposed bypass will cross the River Ouse to the east of Selby. The Agency has had detailed discussions with the Department of Transport regarding the implications of building a new bridge over the river and will retain an involvement in its design and

construction with the aim of ensuring that the environment is protected and enhanced as part of the scheme.

It is predicted that in the City of York there will be an increase in traffic of up to 29% by 2006. This will potentially result in increased congestion, longer journey times and a deterioration in environmental quality. The Local Plan proposes the City Council's preferred approach of holding peak numbers at current levels. This can only be achieved by an increase in the use of more environmentally friendly modes of transport or by motorists travelling outside the rush hour.

5.1.5 LAND USE, AGRICULTURE AND FORESTRY

Background

The landscape of an area reflects the complex interplay between the natural environment and man's activities. Geomorphology, geology, topography and drainage provide the basic elements of the landscape and, together with associated vegetation and settlement patterns, determine the essential landscape character of an area.

Whilst the Agency does not have direct responsibility for shaping land use policy, it must be recognised that the ways in which land is utilised will have an impact on the Agency's areas of responsibility. Forestry, agriculture, urban and industrial development will not only affect adjacent watercourses but may also have considerable impact downstream on groundwater, surface water and on the atmosphere.

Sustainable development is seen as the cornerstone of Government land use policy.

The Agency will seek to influence land use policy and practice through a number of routes:

- the planning process, as it is a statutory consultee for structure and local plans, as well as for certain individual planning applications (including support of redevelopment which may benefit the environment, such as on contaminated land);
- the authorisations process through consents;
- through liaison with local planning authorities, other government agencies, industry, landowners and individuals.

While the Agency is well placed to influence some of the factors which impact on the environment, through its regulatory powers, it has little control over the mechanisms which determine land use change. See 5.1.1. This is largely the responsibility of the LPAs through town and country planning legislation.

The Agency has a duty to promote access to water whereas the conservation of landscape and the promotion of access to the countryside in England is the responsibility of the Countryside Commission. The Commission is empowered to designate, for confirmation by the Secretary of State for the Environment, National

Parks and AONBs. In March 1996, the Commission launched its strategy for the next ten years, "A Living Countryside", endorsing its commitment to a number of on-going and new initiatives. These include the "Countryside Character Programme" which defines landscape character areas of the English Countryside (with English Nature and English Heritage); the Rural Action Programme (run jointly with English Nature and the Rural Development Commission); support for local authorities in protecting AONBs; the Community Forests Programme; continuing advice on national planning policy issues and regional guidance. A significant part of the Countryside Commission's new strategy is its support for the Government's target of doubling England's woodland areas.

Forestry in Britain is controlled by the Forestry Commission (the Department of Forestry) which has recently been organised into the Forest Enterprise Agency and the Forestry Authority at both county and regional levels. Forest Enterprise manages the state forest and woodland holdings of the Commission as a multi-purpose forestry resource with commercial and environmental targets. In contrast, the Forestry Authority sets standards for the forestry industry, including Forest Enterprise; provides grants for new and existing woodlands to assist the private sector; ensures protection of woodland resources by administering tree felling and plant health controls. In recent years the Forestry Authority has been advocating the preparation of Indicative Forestry Strategies to guide new woodland creation at a regional level. To this end, it has been working with the Yorkshire Dales National Park Authority towards strategy and guidelines for forestry within the Park.

EC Directive No 85/337 on environmental impact assessment states that projects which may have significant effects on the environment, for example because of their size or nature, must have an assessment of those effects. The Directive specifically includes initial afforestation where this may lead to ecological changes.

A high proportion (>80%) of land in this Plan area is in agricultural use. PPG 7 sets out the Government's guidance on agricultural areas, the rural economy and protection of high grade agricultural land. There is a need to diversify the rural economy and the Agency supports schemes to do so. It is also important to protect high grade agricultural land from irreversible development and, instead, encourage development on brownfield sites.

Local Perspective

Farming

Agricultural Census data covers the period 1985-1995 and shows a picture which is generally consistent with national trends:

- The area of arable land has remained relatively stable but there has been a continued shift to winter cereal crops.
- There has been a decline in rotational grassland matched by an increase in

longer term grassland.

- In the livestock sector there has been a decline in the number of dairy cattle with counterbalancing increases in beef cattle and sheep numbers.
- There has also been a slight decline in poultry numbers but a noticeable increase in pig numbers.
- The number of full-time dairy farms has declined markedly with many holdings switching to a greater emphasis on beef cattle and sheep.
- There has also been a marked drop in the number of specialist cropping farms.

There are large areas of sensitive moorland in the uplands in the west of the area. Much of the moorland is managed for red grouse, a species that has both economic and conservation importance, being Britain's only indigenous bird species.

Moorland gripping was practised extensively in the Swale, Ure and Ouse catchments in the 1960s and 1970s, encouraged by significant grant aid from MAFF.

The consequences of these works can include the following:

- rapid runoff of rain and snow melt from the moorland resulting in drying out of the peat margins and increased susceptibility to flash flooding;
- over deepening of the grips (drains) has led to considerable erosion on some moors and potential for increased siltation of watercourses downstream.

MAFF and English Nature have recognised the adverse environmental effects of gripping and now provide grant aid to block grips and thus reduce the rate of surface water runoff.

The Yorkshire Dales National Park designation in upper Swaledale has served to protect the landscape and preserve traditional patterns of land use, although decline in traditional hay meadows has been seen with the increasing intensification of agriculture.

In 1987 MAFF designated the Pennine Dales (including Swaledale and Arkengarthdale) as Environmentally Sensitive Areas (ESA). This voluntary conservation scheme allows compensation payments to farmers who wish to continue traditional management practices which are otherwise uneconomic. The take up of the scheme has been very high and the conservation value of these areas is protected for the present.

Where agriculture dominates the area, any discharge of pesticides, sheep dip, silage liquor, slurry or other farm waste can cause serious pollution incidents (see Issue 4).

Diffuse source pollution, resulting in leaching of nitrates into natural waters, can occur

from runoff, containing fertilisers and pesticides, from changes in cropping or the ploughing up permanent grassland.

Subcatchments identified as being affected by discharges of farm effluents are being targeted using biological and chemical sampling surveys followed by a programme of farm visits to ensure implementation of schemes to terminate polluting discharges. In the past three years the Agency has vetted and given approval for 217 schemes within the area, aided by grants under the Farm and Conservation Grant Scheme administered by MAFF.

The River Ure also rises within the National Park, in upper Wensleydale. From the open moorland the valley falls steeply through limestone escarpments to the flat floodplain east of Leyburn. This plain is generally very fertile, land use being arable and pasture protected by flood defence banks but, between Masham and Tanfield and in the Ripon area, the valley narrows and many of the steep slopes are densely wooded.

As in the case of the River Swale there has been some loss of traditional hay meadows along the upper reaches of the River Ure but the designation of Wensleydale as an ESA has helped to preserve traditional features.

Lower down the river, the landscape has not changed greatly (except where gravel extraction has taken place) but land use has changed rapidly over the last few decades as pasture has been converted to arable and agricultural methods have intensified. However, this process has slowed markedly in recent years due to changes in agricultural policy.

Within the Vale of York agricultural land is very versatile, much of it being high grade and a mixture of arable and pasture. In the past the proportion of arable and pasture land has changed according to economic circumstances. The last 50 years has seen the proportion of arable land increase with the use of fertilisers and pesticides but this process has been largely halted as a result of the 1992 Common Agricultural Policy Reform. Again, the current farming recession, and the need to curb agricultural over-production are likely to bring further changes as farms diversify and land is set aside. Future trends will be influenced strongly by further developments in EC Agricultural Policy.

Land use in the tidal Ouse catchment is predominantly arable, although there are narrow stretches of semi-natural grassland along the river. The current over-capacity within agriculture offers unprecedented opportunities for the Agency to influence land use to benefit and improve the environment. Current agricultural support mechanisms are intended to limit production increases and various grant schemes encourage farmers to manage their land under traditional systems, to the benefit of wildlife and the environment. Forestry schemes are grant aided by the Forestry Authority with the Woodland Grant Schemes encouraging the creation of new woodlands and good management of existing areas. However whilst incentives to plant small areas of trees (up to 2 hectares) are proving popular amongst some farming and landowning sectors, the grants available for larger schemes are not generally being taken up.

Of considerable interest to the Agency is the existing set aside scheme and the MAFF Countryside Stewardship Scheme which targets the conservation and enhancement of some key landscapes, features and habitats and where appropriate improvements in public access to them. These schemes will hopefully improve watercourses through a reduction in habitat degradation, diffuse pollution effects, erosion and sediment loss.

The Agency has been involved, for the last four years, in a collaborative project with the Farming and Wildlife Advisory Group (FWAG) involving the preparation of Farm Conservation Plans. It is hoped that these links will continue in the future, promoting sympathetic land use and enhancing the conservation value of the whole area. Land use cover by 1 kilometre squares is shown in Figure 7.

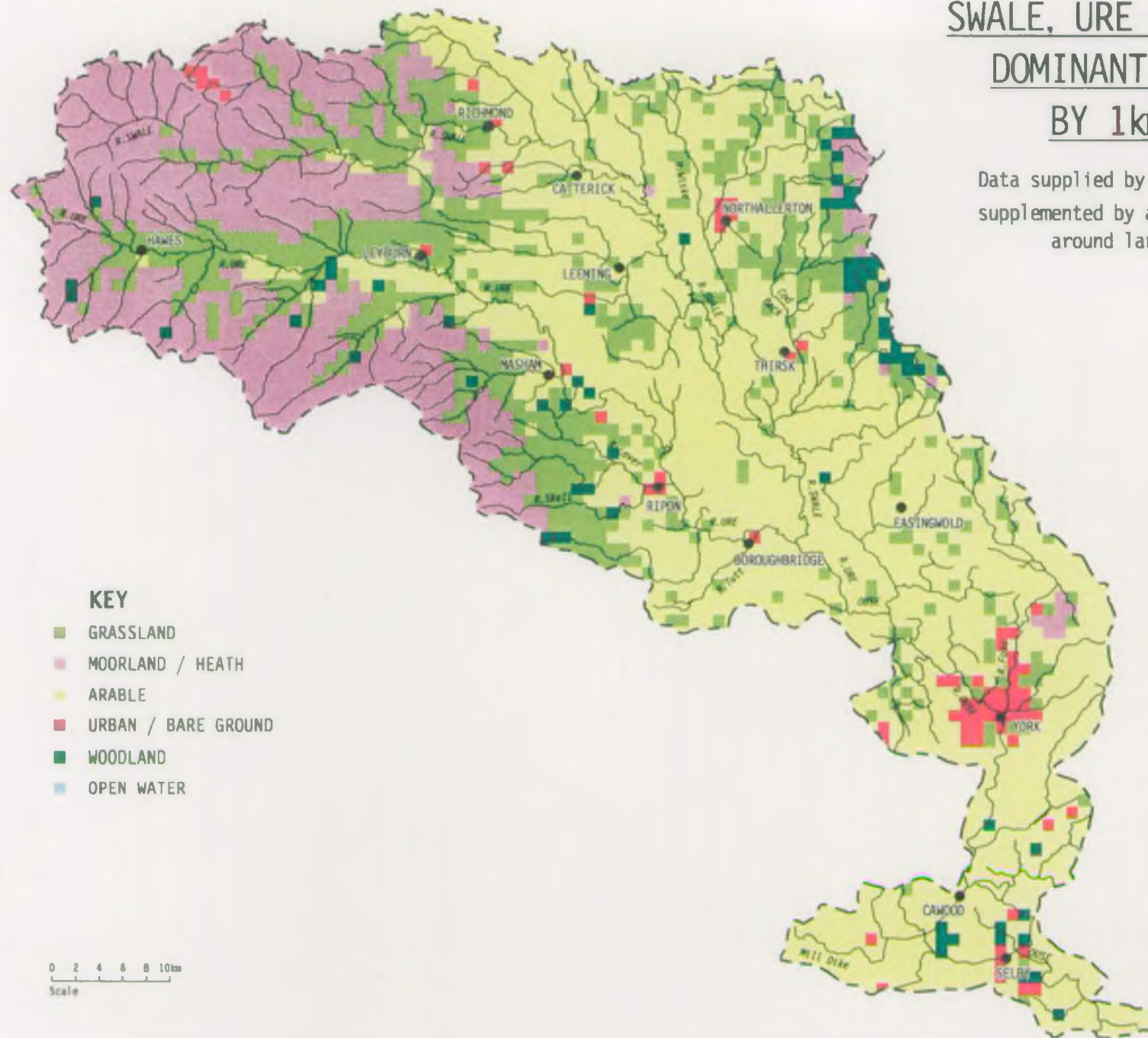
Landscape and Environment

The most important habitats for wildlife are those which have been managed in a traditional way, without disturbance, over a long period of time. Such habitats are referred to as semi-natural and include some of our best woodlands, grasslands, wetlands and moorland habitats. These habitats have declined in recent years. Moorland has been lost to forestry and farming and has been damaged by gripping (drainage).

The most ecologically valuable woodlands are, generally speaking, the broadleaved woodlands. Such woodlands provide the richest habitat for wildlife but are declining, often being replaced by coniferous plantations which have less value to wildlife.

The phenomenon of surface water acidification has manifested itself within the area for many years and only more recently has its significance been recognised. The headwaters of the rivers Burn, Skell and Laver are largely fishless, due to episodic acidic flushes. Several south bank tributaries of the River Cover are similarly affected. Several fish mortalities occurred in 1976 but others have been recorded over a period of at least 50 years. In 1983 approximately 30 tonnes of rainbow trout were killed at the fish farm on the River Burn, attributed to an acid flush.

Afforestation within the area is variable. The Ure catchment has been subjected to more forestry plantation than the Swale, with substantial conifer plantations occurring at the head of Widdale, Raydale and the Catterdale area in addition to plantations above Walden Beck, on Witton Fell and around the River Burn. No significant forest plantations exist within the Ouse catchment. The current uniform design of many plantation areas will gradually change as these forests mature and enter a felling and restocking phase.



SWALE, URE AND OUSE AREA DOMINANT LAND COVER BY 1km SQUARE

Data supplied by MAFF, ITE Data Source
supplemented by additional information
around large urban areas

Figure 7

The application of the Forestry Authority's environmental guidelines, as a pre-requisite to felling permission, will ensure that a more diverse forest structure is created. The inclusion of more open habitats within the second-generation forests will help to reduce the adverse effects which trees have on water quality, in some areas, because of particular geological formations.

Current Government forestry policy is actively promoting more woodland planting on better quality land at lower levels. Provided land values fall to levels where forestry can compete with agriculture, this policy should lead to new woods and forests, including flood-plain woods being planted in the lower parts of these catchments as long as flood defence interests are not compromised.

5.1.6 MINERAL EXTRACTION AND MINING

Background

Mining and quarrying can affect the water environment due to the physical presence of a mine or quarry, dewatering or discharges from a site. Quarries can intercept runoff from surrounding areas thereby depriving surface watercourses of water, or can intercept groundwater flow which may feed springs or support groundwater abstractions from boreholes. Dewatering at mines and quarries can affect groundwater flow which may then affect not only groundwater abstraction but also springs and surface watercourses by reducing inflow and lowering the water table. Discharges can have an impact on receiving waters owing to the presence of high levels of suspended solids which can clog the bed of a stream creating a poor environment for flora and fauna. Mining subsidence can also affect flood defences and the level of protection which they provide.

The Agency is a statutory consultee on all planning applications for mining, quarrying and mineral extraction. As such, the Agency will make comments on any proposals to ensure that the water environment is protected. Direct discussion with the operator is also an important part of the process especially on developments with a potentially large impact on the water environment. The LPA is responsible for implementing conditions which are placed on planning agreements. The Agency has a good working relationship with the mining industry and regular meetings are held to discuss the implications of possible future subsidence.

Clay, limestone, sand and gravel are worked to provide various materials for the construction industry. Minerals can only be extracted where they occur naturally so county councils have to plan to ensure an adequate and steady supply for industry. Mineral working has the potential to affect the LEAP area both as a direct result of the extraction works themselves and through the discharges of effluent. In terms of after-use, the environmental impact on groundwater levels and movement and on the consequences for watercourses and water level dependent habitats is a concern.

There are some aspects of mineral extraction which can also affect flooding: raised banks around gravel pits can obstruct flood flows;

pits worked "dry" can lower local water tables; restoration of pits can change traditional underground water flows. These are issues requiring deliberation at the planning stage.

When properly managed and planned, the presence of mineral workings is not necessarily incompatible with environmental protection. Some habitats are irreplaceable, but others can be mitigated for or improved upon by imaginative restoration. Such restoration can provide recreational opportunities or can be designed to create diverse wetland habitats which may add significantly to the nature conservation resource and help replace certain types of habitats lost from our floodplains.

In general, mineral extraction in the area is controlled by the LPAs through the application of a hierarchical set of constraints. The strictest controls are generally placed on nationally designated areas such as AONBs and SSSIs; the strength of the constraints reduces for areas of local importance such as river valleys and floodplains or Special Landscape Areas (SLAs). Some constraints are not constraints on extraction but influence the type of process and restoration.

MAFF will have an interest in mineral workings where proposals are on the best agricultural land (ie. grades 1-3a). Ideally, such lands should be avoided but, where they have to be worked once operations have ceased they should be restored to their original quality and used for agriculture.

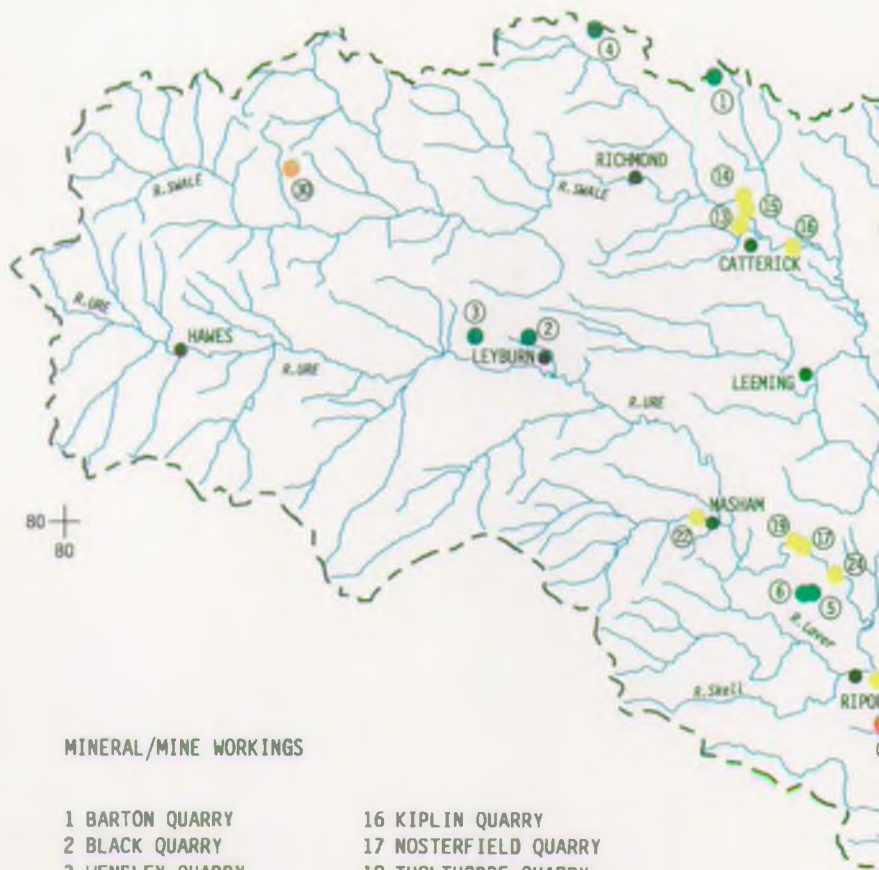
Local Perspective

There are a number of mines and quarries within the area. Materials worked include coal, limestone, clay, sand and gravel. (see Figure 8).

The mining of coal from the Barnsley Seam in the Selby coalfield is the most important industry in the area. The 5 shafts and 1 drift mine which make up the complex all have discharges in the area. During the planning stages, in the late 1970s, the pits were expected to be dry. However, once development work started in the 1980s, significant quantities of mine water were produced. This has led to a major reassessment of water management and treatment policy at all the mines in recent years.

This process together with the necessary discharge consent revisions, is still on-going. Significant advances have already been made as a result of the Agency pursuing a policy of connecting each mine directly to the tidal River Ouse. Problems with effluent quality at Rachael Mine resulted in the minewater being conveyed underground to a tributary of the River Ouse but, as the current rate of less than 50 litres per minute is not expected to increase, no problems are envisaged.

The drift mine at Gascoigne Wood currently discharges into a tributary of Selby Dam. Discussions are underway with RJB Mining with a view to improving the quality of the discharges or diverting them underground to one of the shaft mines with a pipeline to the River Ouse (see Issue 5).



MINERAL/MINE WORKINGS

- | | |
|------------------------|-------------------------------|
| 1 BARTON QUARRY | 16 KIPLIN QUARRY |
| 2 BLACK QUARRY | 17 NOSTERFIELD QUARRY |
| 3 WENSLEY QUARRY | 18 THOLTHORPE QUARRY |
| 4 FORCETT QUARRY | 19 WEST TANFIELD QUARRY |
| 5 GEBDYKES QUARRY | 20 ALLERTON PARK QUARRY |
| 6 POTGATE QUARRY | 21 FARNHAM QUARRY |
| 7 GASCOIGNE WOOD MINE | 22 MARFIELD QUARRY |
| 8 NORTH SELBY MINE | 23 RIPON RACECOURSE QUARRY |
| 9 RICCALL MINE | 24 URE VALLEY QUARRY |
| 10 STILLINGFLEET MINE | 25 ASENBY QUARRY |
| 11 WHITEMOOR MINE | 26 RIVER OUSE |
| 12 WISTOW MINE | 27 ALNE |
| 13 PALLETT HILL QUARRY | 28 LITTLETHORPE |
| 14 SCORTON QUARRY | 29 ESCRICK BRICKWORKS |
| 15 TANCRED QUARRY | 30 MELBECKS & REETH HIGH MOOR |

0 2 4 6 8 10km
Scale

MINERAL EXTRA

Map of the Yorkshire region showing the Ouse river system and various towns. The map includes a legend with colored dots and numbers 1 through 12. Towns labeled include Northallerton, Thirsk, Easingwold, Boroughbridge, York, Cawood, and Selby. The Ouse river is shown flowing through the region, with tributaries like the R. Aire, R. Don, and R. Great Ouse. A dashed line indicates the boundary of the region.

- - - CATCHMENT BOUNDARY
 — RIVER
 — TIDAL LIMIT

•

Figure 8

The Agency employs a mining subsidence consultant who liaises with the Coal Authority and RJB Mining to keep the Agency informed of both long and short term subsidence possibilities. Works are undertaken by the Agency where necessary and at the expense of the mining industry, to raise existing flood defences prior to subsidence occurring to ensure that the existing level of protection is maintained at all times (see Issue 5).

The Agency will continue to monitor the effect of subsidence on flood defences and will work with the mining industry and planning authorities to ensure that mining activities do not adversely affect flood defence standards in the area.

The prospects for deep coal mining are uncertain. The Agency in conjunction with the Coal Authority, with whom a Memorandum of Understanding has been agreed, will assess the potential impact on groundwater or surface water as a result of mine closure and work to prevent any adverse effects on the water environment.

There are six limestone quarries in the area and these extract either Magnesian Limestone or Carboniferous Limestone. The quarries are confined to the west and north of the area. Limestone hydrogeology can be complex and the impact of quarrying in such rock has to be carefully considered.

Clay extraction does occur in the area but this has little impact on the environment.

Fourteen of the quarries are for sand and gravel. Quarries are mainly in river terrace, glacial or alluvial deposits. Owing to the nature of the deposits, it is common for the quarries to be adjacent to rivers. Generally sand and gravel quarries are worked dry which involves dewatering sometimes on a large scale. This can affect springs, local watercourses and lakes. Gravel extraction from river channels also occurs within the area and is known to have an impact on river ecology. The Agency will strive to protect the water environment through planning consultations and direct discussion.

There is continuing expansion in the number of sand and gravel quarries with some large scale developments due to begin in the near future. Planning permission has recently been granted for a 35 year sand and gravel quarry at Ellerton-on-Swale. The Agency has been heavily involved with this site to ensure there is no detriment to the local springs and water courses and has agreed a scheme of monitoring and mitigation measures for surface and groundwater resources.

5.1.7 TOURISM

Background

Tourism makes an important contribution to the local economy and employment. This LEAP recognises the value of tourism and seeks to ensure that it continues to make an effective and sustainable contribution to the growth and development of the local economy. The Agency has no direct role in the management of tourism but realises its importance in this area and its potential for impacting on the environment.

The growth of tourism is largely influenced by available accommodation and facilities so the policies focus on these aspects. The majority of serviced accommodation is concentrated in settlements, especially the market towns and larger villages. Whilst favouring tourism development in these areas, it is recognised that many tourists want to be in the countryside and this is where the economic benefits of tourism are needed. However, strong safeguards will be applied in rural locations to ensure that development is acceptable in terms of its effect on the landscape, nature conservation, farmland and settlements.

The Government is encouraging farmers to develop alternative sources of income. Providing tourist facilities, particularly accommodation, can be an important form of diversification. Proposals will be supported provided they do not conflict with the need to protect the countryside.

Local Perspective

There is a close relationship between tourism and the environment. Tourists are drawn to the area by its picturesque market towns and villages and attractive countryside. Tourism, therefore, potentially relates well to the Plan's strategy as it utilises the renewable resources and natural advantages of the area and can be a positive force for the conservation of its main environmental assets. However, tourism which is insensitive can damage the environment, dilute local character and distinctiveness and threaten the very qualities that make the area attractive.

Tourism is a major element of York's economic and social viability. It is estimated that some 2.5 million visitors each year come to the City, and that tourism supports some 6,000 jobs. However, equally, it imposes a major environmental burden on the historic City and its citizens.

In line with Government policy in PPG21 ('Tourism'), the Agency's approach is based on drawing a balance between maximising the economic and employment benefits of tourism and safeguarding the environment and the amenities of residents. In general, tourism development is likely to be more acceptable when it is sustainable. That is, when it draws on, maintains and enhances the area's landscape, heritage and culture; whilst respecting the scale, nature and character of the place in which it is sited.

5.2 **WASTE MANAGEMENT**

5.2.1 **SOLID WASTE DISPOSAL**

Background

Waste management activities may have a significant impact on the environment in a number of ways unless they are suitably regulated. Some of these impacts can have long term and serious consequences whilst others may be of a lesser nature and can be quickly and effectively remedied. Some of the most significant potential problems include:

- the pollution of surface or groundwater;
- the uncontrolled escape of landfill gas;
- nuisance caused by litter, vermin, odour, dust, noise or vibration;
- the release of poisonous, harmful or polluting materials into the environment;
- the uncontrolled burning of waste;
- waste materials proving harmful to health;
- the contamination of land on which waste management activities have taken place;
- the blighting of land and the consequent effects on future development and land values;
- traffic pollution as waste is transported from the point of production to the point of disposal.

The Agency's principal role in directly protecting the environment from waste is through the regulation of waste treatment, storage and disposal facilities by way of a licensing supervision system. Under the EPA90, this system seeks to obtain environmental safeguards by setting standards, by means of licence conditions and involves the inspection and monitoring of licensed facilities to determine both compliance with licence conditions and environmental impact. This arrangement also enables the Agency to take appropriate enforcement action to ensure that these standards are met.

IPC seeks to regulate certain waste management processes including incineration and solvent recovery, and this is of particular relevance within the Swale, Ure and Ouse catchments.

The Agency also has a waste planning role which is intended to ensure that the future disposal needs of an area are assessed and a forward plan developed.

A new duty to administer producer responsibility schemes was placed on the Agency by the Environment Act 1995. These schemes require industry to recover value from specified waste streams. The first scheme, implemented during 1996, covered packaging waste. The Agency's role is to monitor and enforce the requirements. Intended schemes will address waste materials such as tyres and scrapped cars.

The main functions and activities of the Agency with regard to waste management are

set out below:

- licensing waste management facilities;
- regulation of IPC processes which involve waste;
- subsequent supervision of licensed activities;
- operation of enforcement procedures aimed at unauthorised activities;
- technical administration to regulate and monitor the movement of special waste - including international movements (very little in this area);
- registration of waste carriers and brokers and promotion of the Duty of Care;
- registration of activities exempt from licensing;
- collection of information about waste arisings and the preparation of a waste management plan;
- 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.

There are a number of wastes which are not controlled by the Agency:

- gaseous emissions (except gaseous emissions from waste disposal and recovery operations, such as landfill gas or those from IPC processes);
- waste from mining and quarrying operations;
- decommissioned explosives;
- agricultural waste.

Local Perspective

There are currently 63 licensed waste management facilities in this LEAP area (see Figure 9).

Landfill Sites -34 licensed sites

Landfilling of wastes is the primary waste disposal method within the area. All household waste that is not recycled is landfilled largely in modern clay lined sites within the area. Collection of household waste is the responsibility of district councils in their role as Waste Collection Authorities (WCAs). North Yorkshire County Council, as Waste Disposal Authority, has had the responsibility for making arrangements for the disposal of waste collected by the district councils. The arrangements are required under the Environmental Protection Act 1990 to be made through a competitive tendering process. In 1993 the County Council set up an 'arms length' waste disposal company, YorWaste, to tender for the waste contracts.

SWALE, URE AND OUSE AREA WASTE MANAGEMENT FACILITIES



Figure 9

The YorWaste sites at Scorton, West Tanfield, Caulklands Quarry and Harewood Whin receive the bulk of the household waste which comes from both within and outside the area. The Greenaways site at Allerton Park receives household waste from Harrogate.

The UK waste site near Selby also receives a small amount of this type of waste from skip-hire companies. In total about 250,000 tonnes annually of mainly household waste is disposed of at these sites.

All these sites are lined in some way, usually with engineered clay, to retain the leachate and to prevent the migration of landfill gas. As yet, there are no landfill gas utilisation schemes in place although the nature of the wastes received means that gas is being generated. At the present time the gas is being passively vented to the atmosphere. Pumping trials, to assess the amount and quality of landfill gas being produced, have recently taken place at the Greenways Waste Management site at Allerton Park and at the YorWaste site at Harewood Whin.

There are four producer-operated landfills within the area which dispose of the waste at, or close to, the point of production. Two are operated by the concrete industry, and take concrete waste and two are operated by the large power stations in the south of the catchment. One of these is a very small operation taking demolition type waste; the other is much more significant taking 500,000 tonnes or more annually of ash from the Drax power station in the south of the area.

The catchment is well served with sites for the disposal of inert wastes from the construction industry; there are 22 sites licensed to take these wastes.

Metal Recycling Sites (Scrapyards) - 15 licensed sites

The main environmental problem associated with scrapyards is from waste fluids in scrap vehicles - oils, hydraulic fluids and coolants - which have traditionally been allowed to drain into the ground. All operators are now obliged, under the terms of their Waste Management Licences (or exemption requirements where relevant), to collect these fluids. Operators must also submit schemes to concrete, or otherwise protect, the surfaces of sites used for potentially polluting activities and for the phased installation of sealed drainage systems and interceptor tanks thereby preventing the discharge of contaminating fluids to ground.

There are now 15 licensed metal recycling sites within the area which regularly receive visits from the Agency. Most of these are vehicle dismantlers who buy in scrap or damaged vehicles which they dismantle for spares, the dismantled shells are sold on to scrap metal dealers who crush and shred them before passing on the recovered materials - mainly metals, although more forward looking operators are identifying and separating plastics - on to the metal production industry.

Waste Transfer Stations - 5 licensed sites

Waste transfer stations are traditionally used by skip hire companies, and the utilities who dig up the roads, to bulk up small amounts of waste prior to transferring to landfill. With the advent of the landfill tax it is expected that these sites may become busier as it will become an economic proposition to pre-sort into two categories, the inactive and active wastes, thereby minimising the amount of landfill tax payable at the higher rate.

The major issues of concern in such operations are the uncontrolled burning of wastes - thereby reducing the operator's disposal costs - and the infrequent clearances of wastes, particularly putrescible ones leading to problems with odours and vermin.

Incineration - 1 licensed facility

There is only one incineration facility licensed within the catchment area. This is for the burning of dead pets. At the time of writing, the facility had only recently been licensed and, as yet, no pets have been burned within it.

There are a number of small scale incineration operations in the area which fall outside the waste management licensing regime owing to the size of the operation and the fact that they are in-house disposal facilities. Depending upon the nature and scale of these incineration processes, regulation is the responsibility of the IPC section of the Agency or the local council.

Waste Movement

With certain exceptions, all carriers of controlled waste must register with the Agency under the terms of the duty of care legislation. There are over 100 registered carriers in the LEAP area. This is not a reflection of the scale of waste movements because, once registered, carriers can carry waste throughout the country.

The major movements of waste in the area are associated with the disposal of municipal wastes carried by the local council. As has previously been mentioned, they councils dispose of waste at four large landfills in the catchment. Some of this waste is generated within the districts of Harrogate and Ryedale, large parts of which lie outside the catchment area. In addition some of the waste generated within Selby is disposed of outside the catchment area. Consequently, the full picture for waste movements is unknown although it is suspected that the catchment is, very slightly, a net importer of municipal waste.

The picture for the disposal of other wastes is similar, although the ready availability of small inert-waste - the waste stream which makes up the bulk of the remainder of the wastes disposed of - sites means that it is probable that most construction waste arising within the catchment remains there and that the haulage distances are small.

Unlicensed Activities

Certain activities, because of their small scale or a lack of any perceived environmental hazard, are exempted from the waste management licensing regime. Organizations carrying on these activities are obliged to register with the Agency which subjects them to some supervision. There are also certain people who operate illegally and the Agency has a duty to bring their operations within the law. The supervision of exemptions and enforcement action against illegal operations takes up a considerable amount of the Agency's time and requires a transfer of resources from activities which generate income for the Agency, namely the supervision of licensed facilities.

Registered Exemptions

All registered exemptions within the catchment are subject to inspection at least once whilst in progress, where an assessment of their potential environmental impact is made. There is, however, a problem with the type of activities which may or may not be exempted and the potential environmental impact of non-compliance. These range from the storage of packaging waste by the retail trade to schemes which are large landfilling or landraising operations. Licensed landfills are regularly supervised to maintain standards, particularly over the types and quantities of wastes deposited. Waste deposits under the terms of these exemptions are not subjected to the controls provided by the supervision and inspection regime. However, the consequences of the wrong sort of material being deposited can be as bad or worse than at a licensed facility.

One exemption from waste management licensing which is of particular interest is the spreading of waste on land. Currently, wastes arising within abattoirs, the food processing industry, cement manufacture, paper processing, septic tanks and biological treatment plants may be disposed of by application to agricultural land. This may only be carried out where it is claimed this results in benefit to the land.

The rural nature of the catchment means that there is an abundance of land which can 'benefit' from this treatment, consequently this activity takes place on a large scale within the area and there is some concern that deposits take place with insufficient control or supervision. Defining and assessing benefit to land is difficult. Land quality has to be assessed before deposit which is not always possible.

The only control which the Agency has over these deposits is a requirement that the waste depositor pre-notify it of any intent to deposit, listing the type and volume of waste and the dates it intends to make the deposit. In the first six months of 1996 there were ten notifications of waste deposited to land from 2 operators.

Deposits in this period included the following:

Blood and guts from abattoirs - approx. 2,300 tonnes

Biological effluent treatment plant wastes - approx. 1,000 tonnes

Food processing wastes - approx. 700 tonnes

The problem of BSE in cattle has raised the profile of abattoir waste disposal and,

subject to the availability of resources, specifically personnel, it is intended to spend more time supervising this activity in the future.

Illegal Operations

Although most of the illegal waste deposits in the catchment are of relatively innocuous material the consequences in terms of visual blight can be severe. The following up of such illegal deposits has traditionally been given a high profile in the catchment area, particularly if it has been suspected that incidents are organised for commercial gain rather than being thoughtless random events.

Contaminated Land

In areas of industrial development, patches of contaminated land are left behind. The largely rural nature of the catchment area means that there are no areas of large scale industrial contamination as can be found in areas which bore the brunt of the effects of the industrial revolution and subsequent developments. The main type of industrial dereliction within the catchment area is as a result of quarrying and this is largely "remediated" by landfilling.

Information on contaminated land is currently held by the district councils, of which there are ten in the catchment area. The Agency is shortly to take over some responsibility for the identification, assessment and possibly, the remediation of areas of contamination. The onus will remain on local authorities to identify contaminated sites and draw them to the attention of the Agency and the owner amongst others. Any of these sites which are deemed to be 'special sites' - regulations will be made to determine what types of site should be regarded as special - will become the responsibility of the Agency. There are not thought to be any such sites in the LEAP area.

The 3 highest profile areas of contaminated land are all in the York area. These are:

- The former St Nicholas' tip, adjacent to the City of York Council's depot, which took ash from a municipal waste incinerator and small amounts of unburnt domestic waste. The tip generating small amounts of landfill gas. The site holds a waste management licence.
- A former gas works in York which is awaiting decontamination. Ground investigations have suggested that the removal of the top metre or so will remediate this site.
- The site of the former ABB Works in York which is partly contaminated with blue asbestos. This site has been partly remediated and it is expected that this work will be completed and the land brought into use again as soon as it is economically viable to do so, as the site has some development potential.

In addition to these sites there are about 30 remote disused landfill sites generating

detectable levels of landfill gas in the catchment.

Contaminated land is of particular importance because of its potential for impact on the environment since the contaminants can escape to surrounding land and adjacent watercourses.

Recycling

All of the District Councils within the area operate a number of recycling schemes.

Although there are 10 District Councils partly within the LEAP area, 4 of them - Eden, Teesdale, Leeds and East Riding of Yorkshire - take up less than 1% of the land in the LEAP area. This 1% of land is occupied by much less than 1% of the population of the area and, for this reason, this part of the document concentrates on the following six districts: Richmondshire, Hambleton, Harrogate, Ryedale, Selby and the City of York. Where possible, information relates to the parts of the districts which lie within the area.

Local authority recycling schemes are usually divided into collection schemes where the waste is sorted by the householder and collected in specially adapted delivery vehicles, and schemes where householders take their recyclables to a central collection point (the 'bring' scheme). Nationally it has been found that collection schemes have tended to be uneconomic except in densely populated city areas. The transport costs of carrying out a number of collections have tended to outweigh the revenue earned from recovered materials. Given the largely rural nature of the area it is not surprising that there are no collection schemes operating in the area. However, there are a large number of recycling facilities available taking wastes such as paper, glass, textiles, cars, oil and metals amongst others.

Traditional 'bring' schemes have tended to be based at civic amenity facilities which have themselves tended to be adjacent to landfill sites. Obviously in rural areas, there is a tendency for people not to participate in recycling schemes as the facilities if they are a long way off.

To get round this problem the districts of Richmondshire, Hambleton and Ryedale have introduced mini-recycling centres of which there are more than 150 in the area. There are usually containers parked in the car parks of pubs, community centres, schools, village halls, etc. The containers are sub-divided, to provide compartments for the different materials, and are periodically taken away to a central collection point to be emptied, and the materials stockpiled and sold on.

Another recycling scheme which is being encouraged in the catchment by the councils of Selby and Ryedale is home composting. Householders' own green waste is put into composting bins provided free of charge, at reduced cost or on free trial. Although these schemes have not been running for very long, uptake has been reasonably good and it appears that these schemes can reduce household waste arisings by up to 10%. Given the putrescible nature of these wastes, which makes them subject to the higher

charging band of the landfill tax, this is something which is to be encouraged.

There is a general scarcity of information on the level of industrial recycling in the area but it is not thought to be high. The Agency is planning to target, within the next twelve months, waste producers in the area to find out what they do with their wastes in the hope of encouraging best practice. (See Issue 17).

It is known, however, that National Power, who operate the Barlow Ash Disposal Site in the south of the area, recycle part of their waste into a product used in buoyancy aids.

5.2.2 EFFLUENT DISPOSAL

Background

The disposal of effluents from industry, sewage treatment works, sewerage systems, and agriculture can have significant impact on the quality of receiving waters, particularly when treatment is inadequate or dilution is low.

The Environment Agency is responsible for the protection of "controlled waters" from pollution. "controlled waters" include rivers, canals, estuaries, coastal water and groundwater.

Effluent discharges are controlled by consents and authorisations which impose conditions to regulate the quality and quantity of the discharge. Conditions are set taking account of upstream water quality, the dilution available and the quality required downstream to achieve the desired Water Quality Objective.

The Agency uses two principal schemes for the reporting and management of river water quality: the General Quality Assessment (GQA) scheme and the Water Quality Objectives (WQOs) scheme - soon to be made statutory, both are described in greater detail in Appendix B.

The Agency is continually reviewing discharge consent conditions to ensure that objectives will be met. The review may result in variation of a consent or authorisation. When setting new conditions, the Agency needs to specify a reasonable and practicable timescale for the discharger to carry out required improvements.

The Agency monitors water quality using a network of sampling points which are targeted to provide an accurate water quality classification. Similarly, effluent discharges are monitored to ensure that dischargers comply with the conditions set in their consents or authorisations.

Yorkshire Water Services supply drinking water, dispose of sewage, maintain sewerage systems and maintain public registers of drinking water quality within the Plan area, except for the City of York where drinking water is the responsibility of York Waterworks.

The Office of Water Services (OFWAT) is the financial regulator of the water industry ensuring that customer interests are represented in terms of quality and efficiency of service and price paid.

The River Swale

Upper Swaledale is sparsely populated and agriculture is the predominant industry. The most significant sewage effluent discharges are at Richmond and Colburn and recent improvement works ensure that the River Swale remains of Class A or B (good) quality for its entire length.

Northallerton and Romanby STW discharges cause downgrading of the major River Swale tributary, the River Wiske, to the main river confluence. Improvements are already underway for completion by end August 1997 (see Issue 9).

Discharges from CSOs on the Thirsk sewage system currently give cause for concern, and will be targeted for improvement. The discharge from Thirsk STW will have to maintain a high standard to enable compliance of the Cod Beck with the EC Fisheries Directive (see Issue 9).

There are a small number of trade effluent discharges including fish farms and abattoir discharges within the catchment.

River Ure

The Ure catchment is again largely agricultural with centres of population and significant sewage effluent discharges at Ripon and Boroughbridge. Minor discharges into the lower dilution of the upper river between Hawes and Aysgarth may be contributing to the eutrophic conditions noted in this reach. The poor quality effluent from Masham STW together with poor mixing at low river flows, also gives cause for concern. Trade effluent discharges including those from fish farms and a potato processor are regulated by the Agency within the catchment.

River Ouse

The non-tidal River Ouse can be split into two sections, the reach upstream of York which is of good quality, and the reach downstream of York to Naburn weir which is of fair quality. This deterioration in quality is due in the main to the impact of the discharge from Naburn STW, combined with the recently experienced low river flows. Other contributing factors are the poor quality of the River Foss and combined sewer overflows in York.

The River Foss joins the River Ouse in the centre of York, a distance of 36km from its source at Pond Head reservoir, near Yearsley. Upstream of Walbutts STW at Strensall the River Foss is of fair quality, an improvement on previous years mainly attributable to a reduction in farm discharges following extensive pollution prevention work. Downstream of the STW the river deteriorates to poor quality and is considered

to be eutrophic as a result of the discharge from the STW combined with low river flows.

Tang Hall and Osbaldwick Becks, the major tributaries of the River Foss, have improved in quality in recent years owing to the closure of Stockton-on-Forest and Osbaldwick STWs. Investigations are continuing to establish whether there are any other polluting inputs which may have been masked by the effects of the STWs.

Within the Ouse catchment there are a number of small villages with only rudimentary sewage treatment facilities. In some cases these are causing significant localised pollution and aesthetic nuisance. Recent development has exacerbated this situation although the Agency, through consultation with the planning authorities, is now resisting any development which may lead to further foul drainage into already unsatisfactory facilities.

Discharges of industrial effluents occur in both the River Foss and the River Ouse. They are mainly cooling waters from the large industrial sites in York, although a consent to discharge trade effluent into the River Ouse has recently been issued to a large sugar beet refining company. None of these discharges currently impacts on water quality.

The other main source of polluting discharges in the Ouse catchment is from surface water sewers, either private or public. The types of pollution range from sewage, due to domestic cross connections, to illegal trade effluents from industrial sites. Many of these sewers are located on trading or industrial estates which have grown up on various disused airfields within the area. The Agency is currently pursuing a pro-active campaign, in conjunction with the local sewerage undertaker, to identify sites with a pollution risk and give preventative advice where necessary.

From Naburn weir downstream to the confluence with the River Wharfe, the uppermost section of the tidal River Ouse is of fair quality. This is due to the continuing effects of Naburn STW and other discharges into the non-tidal section.

Downstream of the River Wharfe confluence, the River Ouse is considered to be of poor quality because of the impact of sewage and industrial discharges in the Selby area and pollution inputs further downstream. The rivers Aire and Don also have an impact further upstream owing to the tidal nature of the River Ouse.

Downstream of Selby, the River Ouse exhibits zero dissolved oxygen during the summer months. This is primarily caused by the impact of sewage and industrial discharges from the Selby area. The sewage discharges are being dealt with under the Urban Waste Water Treatment Directive (UWWTD), whilst the Tidal Ouse Strategy is currently being produced to outline the Agency's plans for improving the quality of the industrial discharges.

A project initiated by the NRA in order to reduce resource usage and minimise emissions is the Selby Area Waste Minimisation Group is currently underway. Local

companies meet on a regular basis with the objective of reducing all types of waste, with the resultant benefits in terms of cost and the environment.

The main tributary of the tidal River Ouse in the Selby area is Selby Dam. The upper reaches of this watercourse are of poor quality, due mainly to the historical effects of industrial discharges and current discharges from an industrial estate at Sherburn-in-Elmet. A pollution prevention campaign is proposed for this estate. Effects of deep mining activities in this part of the area are also being investigated. The Selby Dam catchment also exhibits the symptoms of eutrophication due to agricultural activities and discharges of sewage effluents.

Downstream of Selby, the major industrial site is Drax Power Station. The site is now subject to an Agency IPC authorisation and, with the exception of some surface water, all effluents discharge directly to the River Ouse.

Many smaller capital schemes at sewage works in the non-tidal Ouse catchment have been completed. However, major works are programmed at both Walbutts STW (River Foss) and Naburn STW (River Ouse) in order to ensure compliance with European Directives.

There are several locations along the tidal River Ouse where crude sewage is discharged directly to the river. Although aesthetically unacceptable, these discharges have little, if any, effect on river quality. However, these discharges are required to have appropriate treatment, as defined in the UWWTD, by 2005 and the Agency will ensure such improvements are delivered.

The major sewage discharges at Selby and Barlby require secondary treatment. Improvements are scheduled by 2000 for Selby and by 2005 for Barlby. The Agency will however seek to get improvements at Barlby completed early in the AMP3 period (2001 to 2005).

The completion of the Tidal Ouse Strategy will provide the catalyst for further improvements at the various industrial sites in and around Selby. Several discharge consents are already under review, with negotiations ongoing with the relevant companies.

Many capital schemes for improvement of sewage effluent discharges necessary to complete RQOs, were completed in the early part of the decade. However, there are 4 major schemes still to be completed and these are detailed in Table 3.

The programme of work for these major schemes has been agreed with YWS as required under the terms of the EC UWWTD, and the work will be completed by the year 2000.

Through close co-operation with local authorities, the Agency aims to limit development in locations with drainage systems causing concern until the necessary improvements in infra-structure have been attained.

As Crown Immunity is increasingly being waived by Government Departments, the many RAF and Army establishments within the catchment are working closely with the Agency to minimise pollution risk. All establishments will have consents issued to control effluent discharges by April 1997.

Table 3 - Yorkshire Water Services STW Improvement Schemes

Sewage Treatment Works	Completion Date
Northallerton / Romanby	August 1997
Walbutts	December 1998
Naburn	December 2000 *
Selby	December 2000

* The Agency is discussing an earlier completion date with YWS.

The Agency will continue to promote best practice in the storage and disposal of waste, the safe containment of oils and chemicals, and the operation of sewage and industrial treatment processes. Where appropriate, it will encourage the drawing up of management plans for incidents in waste handling to ensure that the impact of episodic events is minimised.

5.3 SURFACE WATER AND GROUNDWATER ABSTRACTION

5.3.1 SURFACE WATER ABSTRACTION

Background

Abstraction of water for potable, industrial or irrigation purposes is an important use of the surface water resource. Whether it is a small or large quantity of water used, the abstraction affects the watercourse immediately downstream by reducing the volume of water. In order to fulfill its duty to ensure that the water resource is managed effectively, the Agency operates a system of abstraction licensing. Almost anyone who wants to abstract water from a surface water source must first obtain an abstraction licence.

An abstraction licence specifies a number of different things including authorising the total hourly, daily and annual quantities which can be abstracted.

Conditions may also be imposed on the licence, where appropriate, in order to protect downstream abstractions, other users, the quality of the water environment and "in river" needs.

Local Perspective

In the Plan area, as a whole, the single largest surface water abstraction used to be from the tidal River Ouse for use at Drax Power Station. This particular licence authorises National Power Plc to abstract up to 96,230 thousand cubic metres per annum, most of which is used for cooling purposes before being discharged back to the river.

Currently, however, the single largest abstraction is made by YWS from their abstraction points at Moor Monkton near York. As a result of an application to vary their licence, they may abstract up to 107,310 thousand cubic metres per annum for public water supply.

The authorised daily abstraction volumes are controlled by a series of prescribed flow conditions on the licence; the full authorised daily volume can only be abstracted when the flow in the River Ouse at Skelton Gauging Station is in excess of 970 thousand cubic metres per day (tcmd). This licence variation is time-limited and will expire in May 1999. On expiry, the quantity authorised for abstraction will revert to 36,135 thousand cubic metres per annum and the daily authorised volume will be restricted when the measured flow is equal or less than 1000 tcmd.

YWS also abstracts water from the River Ure at Kilgram. Like the abstraction at Moor Monkton, a variation was granted to this licence in 1996. The variation is time-limited to expire in 1999, and also contains a residual flow condition which is based on the flow measured at the Agency's gauging station at Kilgram Bridge. From here the water is pumped to 2 storage reservoirs, at Thornton Steward and Leighton, and is transferred out of the Ure catchment and into the Swale catchment. YWS also operates 6 impounding reservoirs in the area. These reservoirs artificially change the flow regime of the river on which they are situated, but have little effect on the flows in the main rivers further downstream.

The proposed Tees Wiske transfer is detailed in 5.3.2.

A major environmental monitoring programme is being carried out by YWS and the Agency to measure the environmental impact, on the rivers Ure and Ouse of the increased abstractions resulting from the granting of time-limited licences. This data will be used to assess whether these licences should be extended beyond 1999.

In addition to these abstractions by YWS, York Waterworks Company Plc also has a licence to abstract water from the River Ouse at Acomb for public water supply. This water is used to supply the City of York and is then returned to the catchment.

SWALE, URE
SURFACE WATER

KEY

- CATCHMENT BOUNDARY
- SUB-CATCHMENT BOUNDARY
- RIVER

DOMESTIC & AGRICULTURE
WATER UNDERTAKING
SPRAY IRRIGATION
GENERAL INDUSTRIAL
COOLING
WATER POWER
MISCELLANEOUS

1. TOTAL 65960 TCMA

2. TOTAL 16780 TCMA

Scale 0 2 4 6 8 10 km

0 2 4 6 8 10 km
Scale

5.3.2 GROUNDWATER ABSTRACTION

Background

Groundwater abstraction relates to the abstraction of water from underground saturated rocks known as aquifers. Aquifers may provide storage for considerable volumes of good quality water which often requires little treatment prior to use. Consequently, one of its most important uses is for public and private drinking water supplies. In addition to potable supply, it is also used for a number of other purposes including cooling, food processing, bottling and spray irrigation.

Like surface water abstraction, the management of the groundwater resource is achieved through granting abstraction licences under the Water Resources Act 1991. The quantities of water that may be abstracted are specified as part of the licence which may also include conditions designed to protect aquifers from over-abstraction. The Region has its own guidelines for the technical determination of groundwater abstraction licences. In addition to checking that there is sufficient available resource to support a new abstraction, or a proposed increase in abstraction, an assessment is made of the potential impact of the abstraction on rivers and other water-dependent features. Some small abstractions, however, do not require an abstraction licence and are therefore classified as exempt abstractions.

Local Perspective

Although the carboniferous rocks contain many small aquifers, the groundwater in these units is mainly discharged as springs. In Wensleydale, these are often utilised for small public water supplies. However, the sources are often remote, subject to water quality problems after heavy rain, and are liable to low flows after prolonged dry periods. Springs are also used by a large number of rural dwellings as private water supplies for domestic and agricultural purposes.

The majority of the licensed abstractions in Swaledale and Wensleydale are for this purpose but overall, the total volume authorised for abstraction is only a small proportion of the total volume authorised for all purposes.

The most significant abstraction from the Carboniferous Limestone is by Yorkshire Water Services Ltd from a borehole at Catterick Bridge. This borehole has unusually high yields and is used to supply water to the Richmond area.

Most of the groundwater abstraction, however, is from the Sherwood Sandstone aquifer which underlies much of the Vale of York. Most of this water is abstracted for public water supply, for example from boreholes at Studforth, Ainderby Steeple, Pickhill and in the Lower Dunsforth area. Another significant use is for spray irrigation purposes. Overall the volume of water authorised for abstraction for spray irrigation has more than doubled since 1985 but there has been little change in the number of individual abstraction licences. Although the volume authorised is only in the region of 10% of the total volume abstracted, abstractions for spray irrigation may have a significant

impact in dry years, because licences are fully utilised and the abstraction takes place during a short season. Figure 11 shows the volumes abstracted in the LEAP area.

5.4 FLOOD STORAGE AND FLOOD DEFENCE

Background

The river network carries surplus water from land to the sea as part of the natural water cycle. Rivers and watercourses can only cope with a certain maximum flow and when this is exceeded flooding occurs. Flooding can be caused by prolonged rainfall, thunderstorms, rapid snowmelt or, more typically, a combination of these. The peak flow of a flood is measured and expressed in terms of the frequency at which that flow is statistically likely to recur, for example 1 in 10 years or a 10% chance in any one year.

When a watercourse floods, the excess water flows into a floodplain. These natural floodplains (which are as much a part of the river system as the channel which carries normal flows) provide extra capacity for the storage and passing downstream of flood water. This capacity is reduced if significant areas of floodplain have been raised, embanked, or built upon. This loss of storage volume can lead to higher river levels elsewhere and for this reason it is not possible (or desirable) to alleviate flooding in all areas. The priority for flood alleviation lies in urban areas because undeveloped floodplains should be allowed to play their natural role.

Local Perspective

A key aim of the Agency is to provide effective protection for people and property against flooding from rivers and the sea and to provide adequate arrangements for flood forecasting and warning.

From its headwaters to where it meets the A1 at Old Catterick the River Swale has a steep gradient. This gradient produces rapid flows and, together with the sandy nature of the banks, causes major erosion problems between Gunnerside and Morton-on-Swale. Anti-erosion measures were occasionally carried out by the Agency's predecessors but this is no longer so unless the erosion threatens a major asset such as a flood bank.

The River Swale is embanked along much of its length from its confluence with the River Ure to Catterick. These works provide numerous washlands which help reduce flood levels downstream. The major washlands are at Myton, Ellenthorpe and Morton. The banks are not owned by the Agency but are maintained under permissive powers.

Only isolated sections of the River Ure have been embanked upstream of Boroughbridge. The major areas of embankment works are to be found in the Wensley, Jervaulx, Nunwick and Newby areas. These sections were originally embanked by the large estate owners.

SWALE, URE AND OUSE AREA GROUNDWATER ABSTRACTIONS

1996

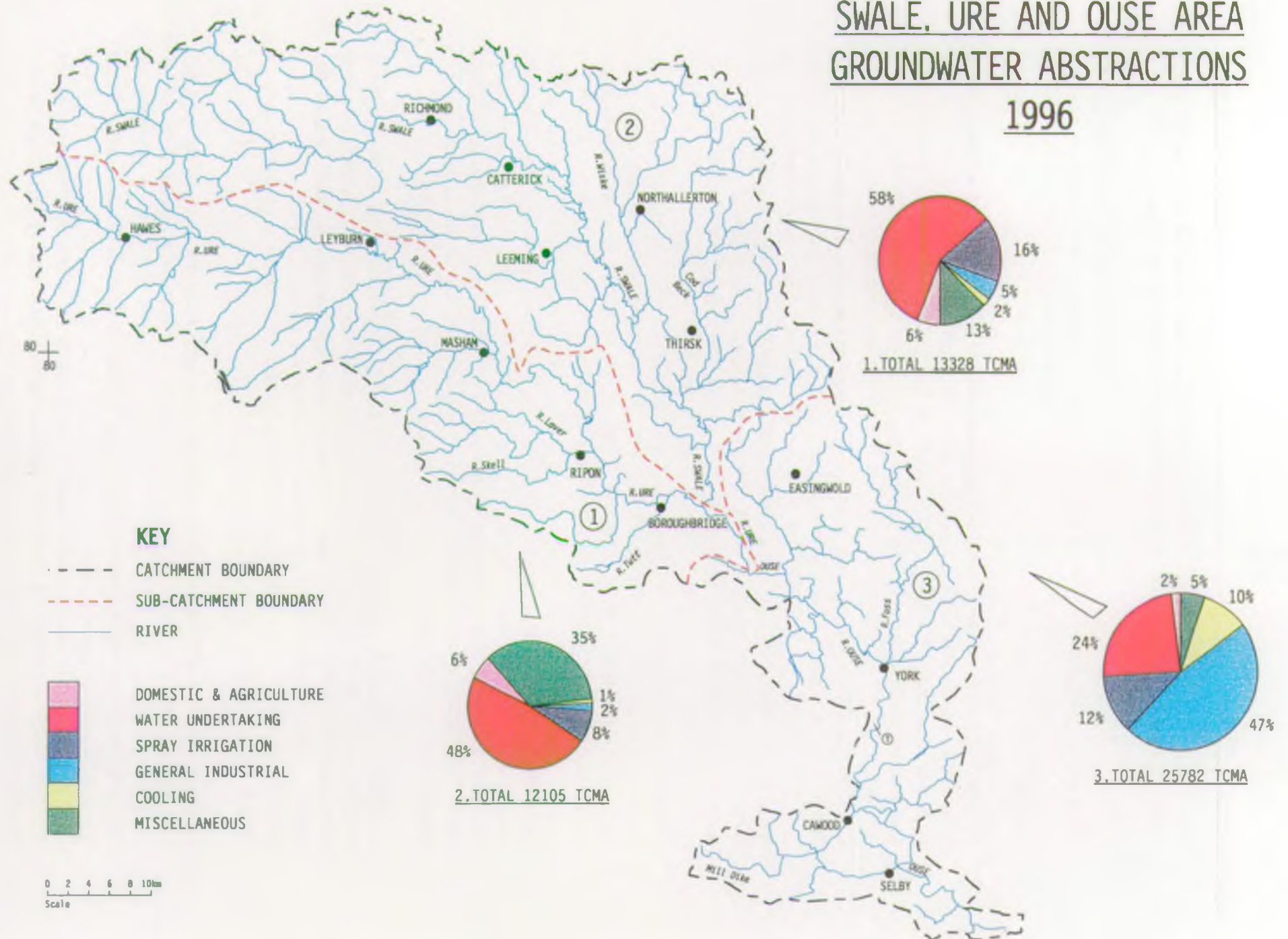


Figure 11

Erosion is a problem on the River Ure down as far as Westwick. Major washlands are present on the lower section of the river at Aldborough and Nunwick.

Both sides of the River Ouse are embanked upstream and downstream of the City of York creating an extensive washlands system. The major washlands are sited at Linton, Clifton and Middlethorpe. Of these, Clifton is a controlled washland which will be described in a later section.

Flooding can also occur when meteorological conditions, such as low atmospheric pressure, wind speed and direction combine with topography so that tide levels are produced that are greater than the defence levels. In estuaries a combination of freshwater river flows and tidal surges can also cause flooding.

Within the LEAP area the River Ouse is tidal up to Naburn Lock. In the tidal reach the River Ouse is embanked on both sides with large areas of agricultural land and urban populations at Cawood, Riccall and Selby are protected by these tidal defences (see Issue 13).

Regulation

'Main River'

All watercourses are classified as either 'main river' (which is defined on maps held by the Agency and MAFF) or 'ordinary watercourse' (sometimes referred to as non-main river). In broad terms the term 'main river' includes all watercourses which contribute significantly to a catchment's drainage though ordinary watercourses may be more significant locally. The legislation dealing with main rivers is the Water Resources Act 1991 and is supplemented by local byelaws. The Agency supervises all flood defence matters but has special powers to carry out or control work on main rivers and sea defences.

Local authorities, and in some areas, Internal Drainage Boards are responsible for flood defence on ordinary watercourses. Local authorities are also responsible for protecting the coast from erosion by the sea. The appropriate legislation relating to ordinary watercourses is found in the Land Drainage Act 1991.

Within the LEAP area there are 13 Internal Drainage Boards, illustrated in Figure 12.

Proposed revisions to 'main rivers' are dealt with through a consultation and advertising process with the decision whether or not to 'main' a river being made by MAFF.

MAFF is the government department with overall policy responsibility for flood defence and coastal protection in England. Grants are provided from central government funds for flood warning and the improvement of flood defences by drainage authorities. In addition MAFF initiates and funds research and development and provides advice on flood defence matters.

SWALE, URE AND OUSE AREA INTERNAL DRAINAGE BOARDS

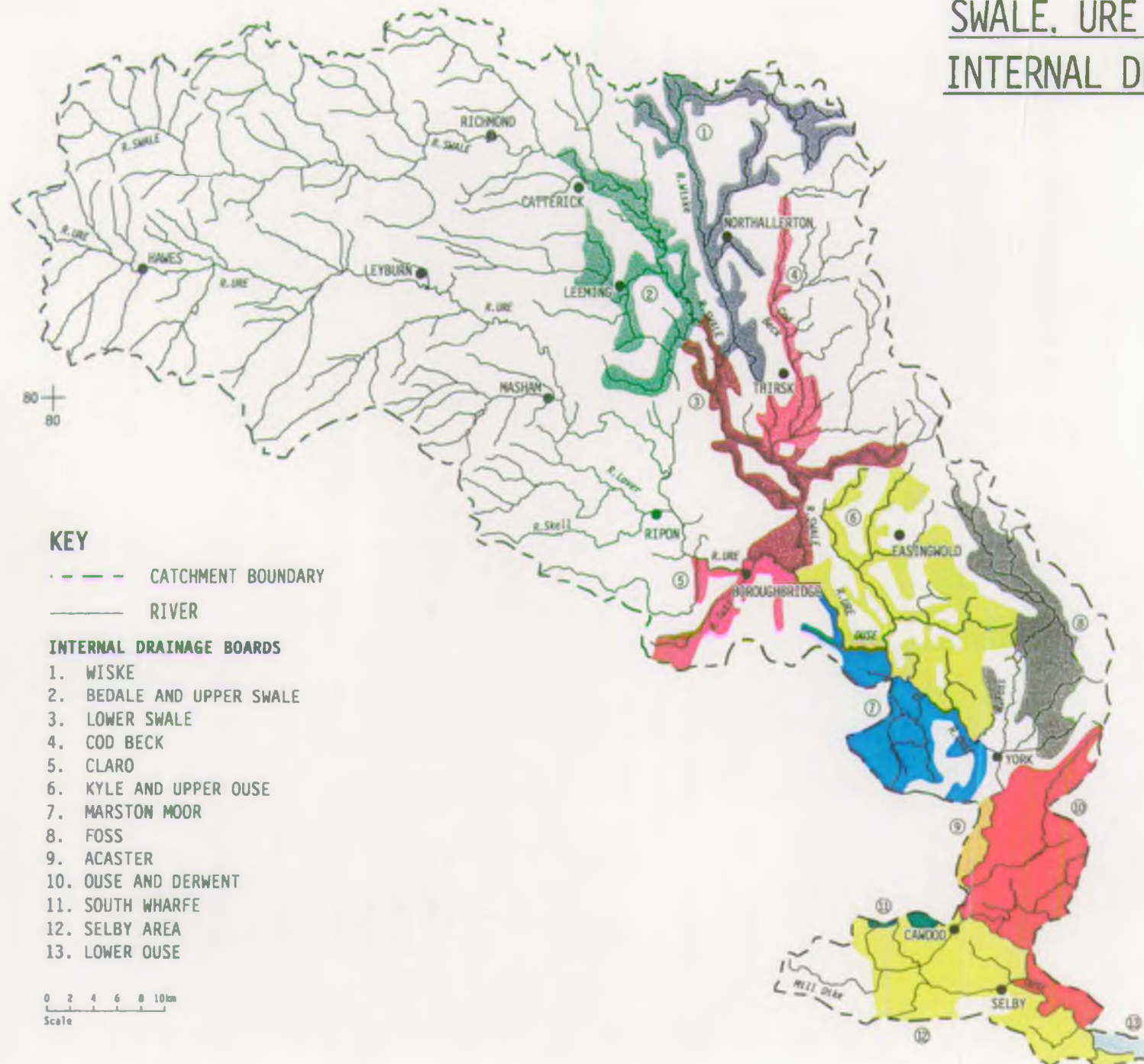


Figure 12

Within this plan area consideration will be given to making recommendations to MAFF for remaining significant watercourses identified by the Section 105 Surveys, (see 5.1.1) provided that the following criteria are met:

- i) 'Main river' lengths will be continuous between the upstream and downstream limits.
- ii) Individual reaches of less than one kilometre should not be 'mained' unless considered essential.
- iii) The upstream limit should be determined by the furthest upstream point of any of the following:
 - a) A culverted watercourse with a catchment area greater than 0.5 square kilometres.
 - b) A river crossing (eg a main road, canal, railway) with property, indicated in orange on the 1:50,000 figures, directly upstream of the crossing.

The Agency's consent is required for works on or near the bank of a 'main river'. This includes construction in, over, under or within 8 metres of the watercourse on activities such as the planting of trees and mineral extraction. The local land drainage Byelaws also give some protection to the floodplain of 'main rivers'. On ordinary watercourses, consent is only required for building any structure that would affect the flow. These powers are used to ensure that people both upstream and downstream of the proposed works are not exposed to an increased risk of flooding.

Access along river banks for staff and equipment needs to be preserved wherever possible especially for emergency works. To ensure this access is kept clear the Agency shall not grant a consent to any development within 8 metres of a main river watercourse which would compromise flood defence work activities.

In deciding whether to issue a consent the Agency shall also take into account whether the proposed works conserve and enhance the environment.

Reservoirs Act Supervision

The supervision of large non-natural bodies of water is laid down under the requirements of the Reservoirs Act (1975). There is a duty to register water bodies which could hold over 25,000 m³ above the lowest adjacent ground level as "reservoirs" and to ensure that reservoirs have a safety inspection by a qualified engineer twice each year.

Within the LEAP area the Agency has 4 washland areas which have been registered as Reservoirs under the Act. These washlands, all on the River Ouse, are: Clifton Ings, Linton Ings, Middlethorpe Ings, Cawood Ings and Wistow Lordship Ings. The location of these washlands is shown on Figure 13.

SWALE, URE AND OUSE AREA
MAIN RIVER AND WASHLANDS

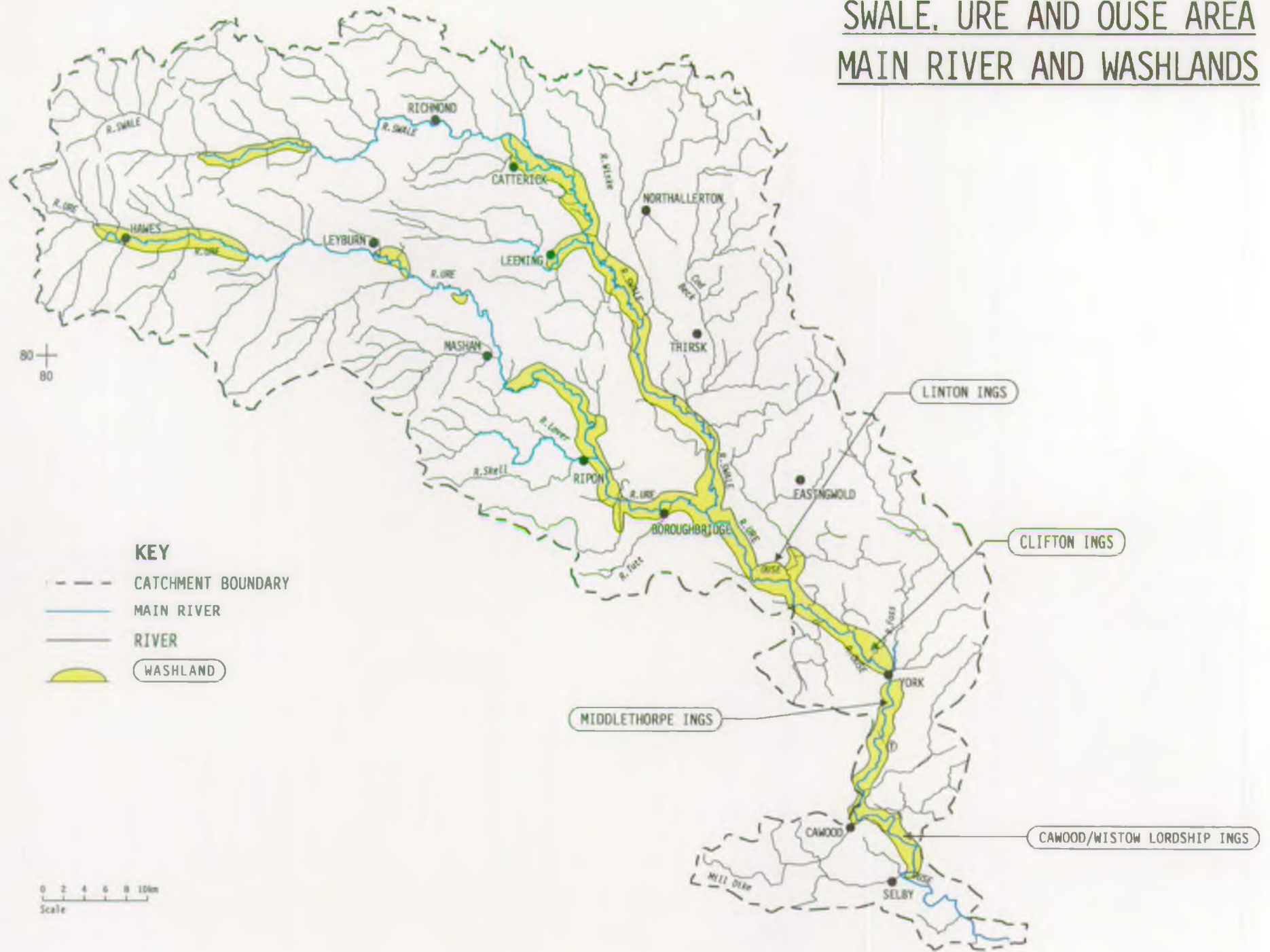


Figure 13

Water Level Management Plans

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

Six sites in the LEAP area have been identified as requiring Water Level Management Plans (WLMP). These provide a means by which the water level requirements for a range of activities, including agriculture, flood defence and conservation, can be balanced and integrated in a particular area. For all six - Clifton Ings, Linton-on-Ouse, Middlethorpe Ings (North and South), River Foss, River Ure grasslands (which is a SSSI) and the River Tutt an Interim Management Statement has been produced. This statement is the precursor of the full WLMPs which are due in 1998 (see Issue 18).

Operations and Maintenance

Agency Owned Structures

River control structures generally control water levels upstream but can be adjusted to allow storm water to pass downstream. The Agency and its predecessor organisations have constructed a significant number of gates, weirs, pumping stations and other such structures to complement river channel improvements.

Privately Owned Structures

Privately owned structures are common on watercourses for a variety of traditional water uses; such as the operation of mills, creation of navigation channels, fish farming and amenity.

Routine Maintenance Regime

The Agency does not own watercourses (except in a few specific locations where flood defence structures have been constructed and their ownership retained). The ultimate responsibility for the upkeep of a watercourse rests with the person who owns the land on the side of the river (also known as the riparian owner). Additionally, owners must not permit an obstruction of the natural flow without consent.

The Agency has permissive powers, on 'main river', to undertake works and exercise its authority according to available resources and priorities. Regular maintenance is essential if the river system and sea defences are to operate properly at times of high water levels. Such maintenance works include vegetation control; repairs to earth embankments and other floodwalls, obstruction and blockage removal; and dredging. In order to assist in the justification and prioritisation of maintenance works the Agency is developing a Flood Defence Management Manual and a computerised Flood Defence Management System. Maintenance can contribute significantly to reducing the risk of flooding.

All maintenance operations are carried out in ways that are sensitive to the environment with every opportunity taken to further conservation.

At times of heavy rainfall its operational priorities are to check and operate water level control structures and where possible to clear debris and identified obstructions.

Improvements

Capital Works

In addition to general maintenance work, the Agency can build new flood defences if flooding is a serious problem in a particular area. Nowadays the Agency usually only builds new defences to protect built up areas from flooding. All schemes must be technically, economically and environmentally sound. The Agency keeps a list of schemes called a 'Programme of Capital Works' which helps it to plan for the future.

There are no major urban flood defence works on the River Swale. The flood defence systems on the river are washlands as described previously. These are areas where existing banks are allowed to overtop in times of high flow and the land behind used for storage. The washlands serve two purposes in that they reduce the frequency of flooding which benefits agriculture, and they also reduce levels of major floods to the benefit of urban areas downstream. The washlands have been formed by raising and strengthening banks and these require maintenance to ensure they fulfil their purpose. Much time and effort is put into the protection and efficient use of washland areas by control and regulation of development, that may result in a reduction in storage volume.

On the River Ure a major flood defence scheme was completed at Boroughbridge in 1988 to protect the town. The scheme comprises riverside defences, a diversion system for the River Tutt, a pumping station in the town for local water and a bank to isolate the town from the Aldborough Ings washland. In February 1991 the town was flooded as a result of the overtopping of the Aldborough Ings bank. The bank was raised in the summer of that year and the town is now protected against floods of a similar magnitude to the 1991 flood.

The River Ouse flows through the City of York and there are numerous schemes along its length to protect people and property from flooding. The first major scheme is Clifton Ings to the north of the City. Use of the washland is controlled by a gate set in the river bank: when the river levels are high this gate is opened to allow flood flows into the Ings and reduce the peak level in York. Operation of the scheme at the correct stage of a flood can result in a reduction of water level in York of up to 150mm; this stage is only when the level in York is expected to exceed 13 feet 6 inches above normal but not to exceed 14 feet above normal. If a higher level is reached the river overtops the floodbank. When full the washland holds about 2.3 million cubic metres of flood water.

The washland at Linton-on-Ouse, although further upstream, is also very valuable since

a large capacity is available for storage during a flood thus reducing levels downstream in York.

In the City itself there are defences at Acomb Landing, Leeman Road, Lower Bootham, North Street and Lower Ebor Street. These comprise earth embankments, brick or stone clad walls and gates. The construction of defences within an historic city such as York sets particular challenges.

When constructing new defences the Agency sets out to ensure that the character and environment in the area is not detrimentally affected. The most recent scheme completed by the Agency's predecessor, is that at North Street which has achieved all these aims.

The other major scheme in York is not on the River Ouse at all. Previously the east side of the City was susceptible to flooding from the River Foss as a result of water backing up from the River Ouse. This led to the construction of a barrier across the River Foss immediately upstream of its confluence with the River Ouse. When the River Ouse reaches a critical level the barrier is lowered until the level subsides, preventing backflow up the River Foss. Flow in the River Foss is pumped around the barrier into the River Ouse to ensure that rainfall on the Foss catchment itself does not cause flooding. Following recent trials, a sonic fish scarer has been installed at the Foss Barrier. Results from the trials have shown that the device is successful in reducing the number of fish drawn through the pumps.

Downstream of Naburn weir, the river is extensively embanked creating a series of washlands. In addition to these features there are specific flood defence schemes at Cawood and Selby. These comprise sections of banks and walls with gates and there are particular features in each location. At Cawood there is a gate on the approach to the south end of the bridge which can be raised to exclude floodwater. At Selby, there are gates at the shipyard and at the entrance to Selby Canal.

The river bank between Cawood and Selby is designed to overtop to allow floodwater into washlands. In 1982 flooding in urban areas in Selby was caused as a result of water migrating south. In order to confine floodwater to washland areas adjacent to the river, a bank was built in the mid 1980s. This bank is known as the Selby/Cawood/Wistow Barrier Bank and it creates a physical barrier to keep floodwater in the washlands.

Proposed Capital Works

A flood protection scheme is under consideration for South Esplanade and King's Staithe in the centre of York. Meetings to discuss proposals have been held with local residents and further public consultation is planned.

In February 1995 a major flood event affected the area. Boroughbridge itself was protected against flooding but surrounding areas at Milby, Roecliffe and Lower Dunsforth were flooded. Following the flood event a hydrometric review was

undertaken and this concluded that Boroughbridge and surrounding areas are at risk from flooding more frequently than previously thought. A scheme to increase the standard of flood protection at Roecliffe is under construction and due for completion in Spring 1997. The Agency is investigating the feasibility of providing defences at Milby and Lower Dunsforth and increasing the level of protection at Boroughbridge.

The defences at Selby are under investigation to assess the feasibility of improving them.

As a result of mining activities in the Selby coalfield, subsidence will affect a section of the River Ouse defences between Riccall and Wistow. Remedial works will be carried out to maintain these defences at their pre-subsidence level.

The need for flood defences to protect property at risk from flooding is largely due to development which has taken place without due regard to its impact on flows or water levels in watercourses within the catchment. In many cases it is the development itself which is at direct risk of flooding. The Agency can only promote flood defences to protect existing development, not proposed land uses.

Duty of Care for Conservation

All new schemes and maintenance works are carried out after consultation with the Agency's conservation staff to ensure that the work is done in an environmentally acceptable manner. Under the legislation three main areas have to be considered, namely to take into account the impact of proposals on natural features, to have regard to protecting features of historic interest: to further the conservation and enhancement of flora, fauna and other natural features.

Some examples of recent changes to maintenance procedures which aim to benefit the environment, whilst still meeting the requirements of flood defence, are: the change from poisoning to trapping vermin; the change in timing and frequency of bank mowing; greater use of natural materials for erosion protection and use of waste materials for conservation projects.

In all cases, close liaison is maintained between the Agency and conservation, fishing and amenity organisations, and farmers or other landowners, to ensure that the benefits of maintenance work are spread as widely as possible.

Flood Warning and Emergency Response

Flood Warning Responsibilities

It should be recognised 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. With regard to public safety we operate a flood forecasting service in the catchment which uses rain gauge and river level data from a number of sites, radar and rainfall forecast data from meteorological agencies, and

information from flood defence staff in the field.

The Agency uses a network of telemetry stations providing data on river levels and rainfall (as shown in Figure 4). These stations alert staff when risk conditions occur and warning and operational procedures are carried out according to laid down instructions. The telemetry network is constantly being updated to provide a Regional Telemetry System (RTS) to serve the needs of different functions of the Agency. Data from the RTS is used by the River Flow Forecasting System (RFFS) during flood events to forecast river flows and levels. Based on forecasts produced, and observed levels, warnings are issued to areas at risk of flooding.

Flood warnings are issued in accordance with a national colour coded system. The ascending level of warning statements, yellow, amber and red, indicate the anticipated severity of flooding.

The Agency will continue to refine and improve the Flood Warning System. The emphasis will be to focus warnings to high risk areas and to define the extent of potential flooding. Localities protected by flood alleviation works, but at risk from an exceptional flood overtopping the defences, will also be incorporated into the flood warning procedures.

During flood events the Agency currently relies on manual readings of a gaugeboard to monitor the River Ure levels at Ripon. Consideration is being given to improving the system to allow remote monitoring with the RTS.

From September 1st 1996, the Agency has taken the lead role in making sure that flood warnings get through to the people actually at risk. Arrangements are agreed in consultation with local authorities and the emergency services. Annual flood warning seminars are also held to review the effectiveness of the flood forecasting and warning process.

Within this area, the Agency uses an Automatic Voice Messaging (AVM) system as the main means of issuing flood alerts directly to the public. Detailed flood warning statements for each flood risk zone are prepared and issued to the media, including AA Roadwatch, for broadcasting to the public. Alternatively the public can call the Floodcall information line (0645 881188) to hear details on the current situation in the area. In addition to providing flooding alerts, and information to the public and media, the Agency issues flood warnings to the emergency services, local authorities and some statutory undertakers. The police co-ordinate the response in major emergencies and along with the fire and rescue service, they provide help during the evacuation of properties. The following areas are covered by flood warnings:

Richmond, Brompton-on-Swale, Catterick, Morton-on-Swale, Kirby Wiske, Topcliffe, Ripon, Bar Lane Roecliffe, Boroughbridge, Myton-on-Swale, Lower Dunsforth, Thorpe Underwood, York, Acaster Malbis, Naburn, Acaster Selby, Cawood and the Tidal Ouse (Selby and Boothferry Bridge).

In the event of the possible overtopping or breach of flood defences, public in the area at risk would be alerted by the use of loudspeaker systems. This same arrangement is also available for use as a backup to the AVM.

At Kirby Wiske a slightly different arrangement is in place. Flood wardens are alerted by the AVM. They have made arrangements with other residents to pass on the flood alert.

Flood Warning Standards of Service

In order to ensure that timely warnings are issued to the right people, the Agency operates 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 wherever practicable.

Emergency Response

At times of high water levels in addition to our flood warning role we patrol the defences, operate flood defence structures, remove blockages and carry out any emergency repairs needed.

No operational work is carried out on the River Swale in times of flood apart from general inspection of flood banks. There is, however, an automatic alarm generated from a river level station at Grinton Bridge. This station automatically faxes rapid rise warnings to Richmond police Station. The fastest recorded rise was 3 metres in 20 minutes at Richmond. The river at Richmond is a popular recreation area and the system was instigated to allow the Police to warn holiday makers and anglers who may be using the river.

On the River Ouse, the focus of the Agency's operations is the scheme at Boroughbridge. The main parts of the scheme operate automatically, that is the closure of penstocks and the pumping station, but it is essential to make sure that access gates in the defences are closed. The emergency workforce maintains a presence in the town during the peak of a flood to ensure the defences perform satisfactorily.

If necessary, the workforce will attend Linton Ings and the sluice at Clifton Ings on the River Ouse to allow operation of the washland. Within the City itself numerous gates are closed, depending on the expected severity of the flood. In addition, once operated the Foss Barrier is manned full-time until the barrier is reopened. The emergency workforce patrols the defences in the city, observing their performance, attending to any problems and monitoring the progress of the flood. Once the flood has subsided the gates on the defences are reopened.

Downstream of York, floodgates are closed at Cawood and the emergency workforce closes a gate at the entrance to the Selby Canal when a combination of high tidal and fluvial flows is predicted. Without this gate levels in the canal could rise and spill over

the banks into Selby. Conditions may dictate that the gate is closed for several consecutive tides but there are other influences on the operation of this gate. The canal is navigable and, when tide levels drop, the Agency is frequently requested to open the gate to allow the passage of boats; if the gate is left closed for long periods when there is local rainfall, freshwater levels can build up to such an extent in the canal that it is necessary to open the gate.

District councils have permissive powers to offer assistance during floods. This may include placing sandbags, moving possessions and evacuating people. Each council has a different policy on the type and amount of help it gives.

The fire service provides help in flood emergencies if it is able to do so. The local station will be able to advise the public on what help is, or is likely to be, available and whether or not a charge will be made.

The county council is responsible for public highways and would deal with any flooding problems associated with road drainage. All county councils have Emergency Planning Officers who may become involved in more serious flood events.

Public surface-water sewage systems are the responsibility of the local water company who may sometimes use district councils as their agents.

5.5 RECREATION AND AMENITY

5.5.1 ANGLING

Background

Angling continues to be one of Britain's most popular recreational sports bringing economic benefits to the area.

Fishing rights in non-tidal waters belong to the riparian owners who may then lease the rights to angling clubs or syndicates. In tidal waters, fishing rights are normally vested in the Crown who allow unrestricted angling but access to the water may be controlled by the riparian owner.

Under the Salmon and Freshwater Fisheries Act 1975, anyone aged 12 years or over who fishes for salmon, trout, freshwater fish or eels in England and Wales must have a valid Agency rod licence, with this system being enforced by Agency bailiffs.

Commercial fishing, for both eel and migratory salmonids, is also controlled by the Agency through licences.

Local Perspective

The River Swale above Richmond is mainly used by trout anglers, although there are some coarse fish resident. Below Richmond coarse fish predominate, with some areas of river stocked with trout from time to time. However chub, barbel, grayling and pike are the main species with dace, roach and bream showing in lesser numbers down as far as Topcliff. Downstream of Topcliffe very few trout are caught. A wide variety of coarse fish species, including good numbers of chub, barbel, pike, dace, roach, bream and eels are caught between Topcliffe and the confluence with the River Ure near Myton. Angling takes place throughout the length of the River Ure from its confluence with the River Ouse to above Hawes and is regarded as of high quality. However, much of the angling on the river is controlled by private individuals and is therefore not readily available to the general angling public.

The River Ure and many tributaries are fished for brown trout, from close to its source down to West Tanfield. Grayling fishing takes place mostly in the Redmire to Middleham area but the fishing extends from Bainbridge to below West Tanfield. Grayling are occasionally caught around Ripon. Coarse fishing starts around Middleham and extends through to the River Ouse. Most coarse fishing activity is found below Ripon. The River Ure is currently the main source of salmon entering the River Ouse.

The rivers Ouse and Ure formerly held a large stock of salmon and supported a commercial net fishery in the tidal Ouse. This fishery fell into disuse in the 1940s as salmon runs declined sharply. Salmon netting was subsequently banned by byelaw.

The fishing on the River Ouse is dominated by coarse fish, although there is always the chance of catching a passing salmon. The nature of the river lends itself to match fishing and in particular, is recognised as a good winter fishery especially in the Dunsforth area and below York.

Long lengths of river bank are without any form of tree or shrub covering making fish holding and feeding stations non-existent. This is being addressed through the intermittent planting of trees. Further tree planting is planned to provide an improvement in the fishery.

Water quality improvements on the main tributaries will assist recruitment in some areas, whilst maintenance of known spawning areas and creation of new ones will further strengthen recruitment in others.

Stocking of fish will be monitored by the Agency in conjunction with the River Swale Preservation Society who have been stocking the river with small barbel and roach.

Angling activities are likely to continue at their current level in the Swale, Ure and Ouse catchment. Improvements in water quality of some upper River Ure tributaries will enhance brown trout fishing, and an improvement of water quality in the tidal River Ouse will see increasing interest in salmon angling as runs improve.

The quality of coarse fishing appears to be significantly affected by large variations in breeding success, therefore any protection which can be given to juvenile fish will benefit angling.

Despite the limited potential for further availability of angling on the River Ure itself, there are prospects that adjacent gravel pits could be developed for angling in the future. It is envisaged that these would be made available to day permit angling and it is likely that they would also allow easy access for disabled anglers.

Conflicts between boat users and anglers in the rivers Ure and Ouse should be ameliorated by close liaison between both parties through user groups.

5.5.2 NAVIGATION AND WATER BASED ACTIVITY

Background

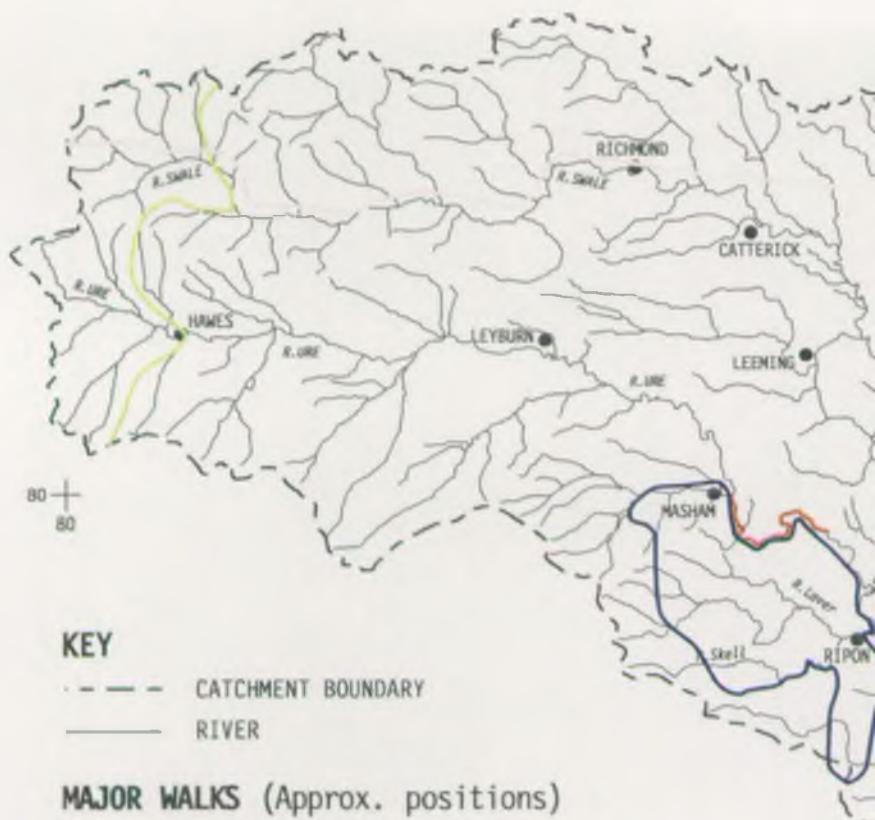
Use of the water environment for amenity and recreation is now recognised as an industry which plays a vital role in the local economy. Passive recreational use of water includes viewing scenery, walking near water and enjoying the fauna and flora associated with the area. Active recreation associated with water includes rowing, sailing, canoeing and angling.

There is an extensive network of public footpaths and bridleways within the area, otherwise access to still waters and some parts of rivers is controlled by landowners. Other recreational activities are permitted at different places by formal and informal agreements between the landowners and sports clubs, societies, groups and individuals.

The Agency has a duty to take into account recreation in the performance of all its functions. The Agency can draw up byelaws, under Section 210 of the Water Resources Act 1991 for purposes connected with carrying out its functions. The Agency also has a vital role to play in liaising with and advising other bodies to ensure that a co-ordinated approach has been taken to the strategic management and development of recreation. This allows the optimum potential of a water body to be realised.

Local Perspective

Since the upper reaches of the rivers Ure and Swale lie within the Yorkshire Dales National Park (YDNP), the amenity value of this area is considerable. Walking is one of the major pastimes and a wide choice of footpaths exists, including part of the Pennine Way (see Figure 14). Various "honeypot" sites exist, such as Aysgarth Falls in Wensleydale. Around Richmond, the Round How picnic site and an area of National Trust woodland are also important sites. Wensleydale is particularly rich in waterfalls including Cotter Force, Hardraw Force, Redmire Force and the falls at Bainbridge and West Burton as well as the Aysgarth Falls.



KEY

- CATCHMENT BOUNDARY
- RIVER

MAJOR WALKS (Approx. positions)

- RIPON ROWELL
- EBOR WAY
- FOSS WALK
- COAST TO COAST WALK
- PENNINE WAY
- TRANS PENNINE TRAIL (Available & Proposed)
- CANOEING
- NAVIGABLE REACHES

0 2 4 6 8 10 km
Scale

SWALE, URE AND OUSE AREA AMENITY AND RECREATION



Figure 14

The York area is another focus for recreational activity. There are several existing cycle ways with more proposed. A new cycle way will follow the River Ouse on Agency-owned floodbanks between Hemingbrough and Barmby-on-the-Marsh as part of the trans-Pennine trail linking Liverpool with Hull.

Sustrans, the organisation responsible for building these cycle tracks, is hoping to create another one following the River Ouse upstream from York.

Footpaths in the area include the Foss Way and the Ebor Way. A North Yorkshire County Council development control document the "Ure and Ouse Recreational Plan" expresses the aim of completing a long distance path between York and Ripon, filling in the missing links along the Rivers Ouse and Ure.

There is a public right of way along the whole of the tidal River Ouse except for a length from Stillingfleet to Wharfedmouth.

The River Ouse and the River Ure are navigable up as far as Ripon which is the most northerly point on the English inland canal system. The canal linking Ripon to the River Ure at Ox Close lock is fed directly by the River Skell in Ripon city centre. In order to gain access this far upstream, there are four weir and lock systems at Boroughbridge, Naburn, Linton and Westwick. British Waterways are the statutory body covering most of this area. The exception is Linton Lock which is presently under the care of independent commissioners and is in a poor state of repair. Loss of use of this lock would leave the recently restored Ripon Canal as an isolated waterway. The boat traffic is almost exclusively motorised pleasure craft and has increased in recent years. Bedale Beck was once a navigable route, as was the River Foss. Although there is one barge still regularly using the lower part of the River Foss, there is little interest in fully restoring this small river for navigation as it could conflict with conservation interests, particularly in view of the flow requirements.

The tidal River Ouse is navigable and used for commercial shipping as well as for recreational purposes.

Canoeing is a popular sport with the main activities taking place on the River Ure between Masham and Sleningford Mill and on the River Swale at Richmond. Anyone wishing to canoe in the area is advised to contact the local British Canoe Union, Yorkshire and Humberside, 10 Crawshaw Grove, Sheffield S8 7EB. Rowing is popular in York and there are dinghy sailing clubs at Naburn and Acaster Malbis.

Semer Water in Wensleydale, a SSSI and one of only two natural lakes in the Dales, is part-used for water sports. Thornton Steward reservoir is used for sailing and there are important fisheries on most of the water supply reservoirs in the area.

There is potential for the recreational use of former gravel extraction workings. For example, this is planned around Catterick on the River Swale.

5.6 CONSERVATION

5.6.1 FLORA AND FAUNA

Background

The Agency's conservation duties are set out in Sections 6, 7 and 8 of the Environment Act 1995. The Agency is required to; i) promote the conservation of flora and fauna which are dependent on an aquatic environment, ii) to further the conservation and enhancement of natural beauty and the conservation of flora, fauna, geological and physiographical features of special interest when formulating its own proposals; iii) consult with the relevant statutory conservation agency (English Nature) where the Agency's activities may affect land which is of "special" interest (e.g. SSSIs).

English Nature is the statutory adviser to the Government on nature conservation in England, with responsibility for promoting the conservation of England's wildlife and natural features. Its work includes the selection, establishment and management of National Reserves; the identification and notification of Sites of Special Scientific Interest; the provision of advice about nature conservation.

The Government has implemented the key provisions of the European Habitats Directive through the Conservation Regulations 1994. The aim of the Directive is to contribute to the conservation of natural habitats and of wild fauna and flora. It identifies species of European importance and habitats within which they are represented. These are to be designated as Special Areas of Conservation (SACs) together with Special Protection Areas (SPAs). The Directive requires the assessment of the impacts of plans or projects on protected areas and there are significant implications in this for the Agency as a competent authority.

There are a number of international agreements and conventions to which the UK Government is a signatory. These include the Ramsar Convention (1971) on the Conservation of Wetlands of International Importance; the World Heritage Convention (1975) on the Protection of Natural and Cultural Areas of "Outstanding Universal Value"; the Bonn Convention (1983) on the Conservation of Migratory Species of Wild Animals. One of the most recent and important is the Rio Convention on Biological Diversity (1992) signed by the UK Government at the Rio Summit.

There are many non-statutory bodies which play a significant role in nature conservation. County Wildlife Trusts operate on a local basis: managing nature reserves, promoting conservation in the wider countryside; and helping to identify and protect sites of conservation value at a county level. The Royal Society for the Protection of Birds (RSPB) plays an important role in wildlife conservation: establishing and managing reserves; conducting research; campaigning on issues of national significance; advising on many elements of land management for birds and other wildlife.

The Farming and Wildlife Advisory Group (FWAG), a non-statutory body with partial

funding from the Ministry of Agriculture, Fisheries and Food (MAFF) and the Department of the Environment, provides guidance to farmers and landowners on the integration of wildlife conservation with farming practices.

Sites of Special Scientific Interest (SSSIs) are designated (by English Nature in England) because of their ecological, physiographical or geological characteristics and protected by the Wildlife and Countryside Act. Those which meet the criteria as set out in the Habitats Directive (see above) may be designated SACs (or SPAs).

Environmentally Sensitive Areas (ESAs) are designated by MAFF. The areas designated as ESAs are landscapes of a distinct topographical and/or land-use type which hold much ecological interest but which may come under threat from more intensive agricultural practices. Farmers within ESAs are eligible for payments to enable them to conserve or restore the desired habitats and land-use practices in order to maintain and improve the conservation value of the targeted areas. MAFF also funds a range of other schemes under its agri-environment package and has recently taken over the funding of the Countryside Stewardship scheme, previously administered by the Countryside Commission. The Stewardship Scheme has broadly similar aims to the ESA scheme but is not run on a defined "boundary" basis; it is targeted to a range of valued habitat and landscape types in the wider countryside including a category of "Waterside Landscapes".

Local Perspective

The River Swale rises above Keld in Swaledale which is initially, a narrow and steep sided valley. High rainfall and a steep gradient make this river exceptionally "spatey", but also comparatively "natural" for much of its upper length. The area at the top of the catchment is designated Mallerstang-Swaledale Head SSSI, and at 2,174 hectares in total (with 1,230 ha in North Yorkshire) is the largest SSSI in this catchment (see Figure 15). The SSSI covers an area of carboniferous upland; it was designated for the range of both limestone and acidic gritstone and shales in its underlying rocks and the associated communities of plant and animal species.

Several much smaller SSSIs mark the positions of the traditional meadowland for which the Dales are famous. These botanically rich meadows were created through traditional management, often for hay, by the Dales farmers over several centuries. SSSI and ESA designations presently protect these areas. Lower Swaledale Woods and Grasslands is another SSSI just upstream of Richmond. Swale Lakes SSSI near Catterick is the last SSSI designated before the river enters the Vale of York.

From its origin to the north-west of Hawes, the River Ure runs in a U-shaped, broad-bottomed, steep-sided valley with limestone escarpments on the valley sides. There are several SSSIs in these upper reaches of the catchment. One of the largest is Semer water, a natural lake above Bainbridge. Others are either meadows, designated for their botanic richness, or ancient woodland adjacent to the river e.g. Freeholders Wood, in Aysgarth, and Hack Fall Wood between Masham and West Tanfield.

SWALE, URE AND OUSE AREA NATURE CONSERVATION



Figure 15

The Nidderdale AONB extends from Nidderdale across the moors and down towards the River Ure at Hack Fall Wood.

Just north of Ripon is Ripon Parks, a linear SSSI following the River Ure for about four miles and taking in both Ministry of Defence and privately-owned land. This area is important for a wide range of habitats including shingle beaches which are important for a number of breeding birds.

The River Ure has a high conservation and landscape value most of the way to the confluence with the River Swale at Ellenthorpe Ings.

Otters are known to occur on the River Ure, though only in very small numbers. The Yorkshire Otters and Rivers Project is working to increase their numbers with assistance from the Agency and other bodies.

No SSSIs are designated alongside the River Ouse upstream of York, indicating the intensity of agriculture in these areas. This is the most managed section of the river with flood banks for most of its length. It is also the area with the greatest potential for habitat improvement. The current FWAG/Agency project is seeking to achieve such improvements.

Both upstream and downstream of York, the River Ouse has Ings land adjacent to it which regularly floods when the river is high. These areas are of high conservation value as well as being important for flood storage. A number of organisations have come together to promote the Ouse Ings Heritage Project, designed to conserve and enhance the wildlife and heritage value of the Ouse Ings in and around York for future generations. Four such areas to the south of York are designated SSSIs.

The River Foss is a small but important river that joins the River Ouse within York. The River Foss is a focus of a great deal of public interest and the Agency has been working with a variety of other organisations and individuals to improve the environmental value of this river. The plan area contains Strensall Common a large SSSI which is an example of acidic, lowland heath and is one of only two extensive areas of open heathland remaining in the Vale of York. Just within the Foss and Kyle catchments is the Howardian Hills AONB.

The tidal stretch of the River Ouse has within its boundaries two SSSIs, Acaster South Ings and Burr Closes. There are also a number of "green" sites important for a variety of reasons, including habitats supporting birds, grasses and flowering plant species. The tidal River Ouse encompasses important flood storage areas for flood defence and these are important conservation sites. The need for otter guards on fyke nets along the tidal River Ouse is continuing to be addressed in an effort to protect the recovering local populations of otters.

Alder Root Disease

In July 1996 it was discovered that the water borne fungal disease, *Phytophthora*, was present at Masham and sites downstream on the River Ure. This disease affects common alder (*Alnus glutinosa*) and other non-native alders, and in parts of southern England has seriously affected 25-50% of alders on certain catchments. Once the disease is in the water of a particular catchment, there is no known way of removing it, since it first attacks the roots first, felling affected trees is not an option for control.

Large sections of the system are dominated by alder. The disease could therefore make a considerable impact on the landscape and ecology of the catchment. The Agency will continue to liaise with the Forestry Authority to determine what action can be taken to stop the disease from spreading to unaffected parts of the catchment.

5.6.2 FISHERIES

Background

Fish populations are dependent upon water quality and quantity and on the physical habitat for their well-being. Fish populations serve as excellent indicators of the quality of the water environment and generate financial benefits to local communities through exploitation by commercial and recreational fisheries.

In England and Wales the Agency has a specific duty under the Salmon and Freshwater Fisheries Act 1975 to maintain, improve and develop fisheries. This is additional to the more general powers for the enhancement and protection of wildlife under the Water Resources Act 1991, the Wildlife and Countryside Act 1981 and the Control of Pollution Act 1974.

The Agency has a duty to further the conservation of the fish communities in addition to its duty to maintain, improve and develop fisheries.

Local Perspective

The distribution of fish species in the Swale, Ure and Ouse area is illustrated in Figure 16.

Fish populations in rivers of the area are generally of a high quality and are a reflection of good water quality and diverse physical habitat. Thus the primary requirement is to protect these features. In some areas the habitat for fish has been degraded by erosion and moving bedload, so schemes have been developed to stabilise the banks and introduce cover for fish. The removal of in-river gravel shoals will need to be investigated as it inevitably has an impact on the fishery.

SWALE, URE /
LOCATION OF

80 80

0 2 4 6 8 10 km
Scale

- - - - CATCHMENT BOUNDARY
 — COARSE FISH
 — GRAYLING AND TROUT
 — SALMON AND TROUT
 — TROUT ONLY

$$\begin{array}{c} 80 \\ + \\ 80 \\ \hline \end{array}$$

0 2 4 6 8 10 km
Scale

Figure 16

Populations of native brown trout on the upper Swale are compromised in some tributaries by acid run-off or pollution, from either agriculture or other sources. The high quality fish populations in the River Swale should be protected and improvements made, where necessary, in the upper and middle River Swale and tributaries by identification and removal of remaining water quality problems.

Although stocking of brown trout occurs in the River Swale, this may have adverse effects on native stocks. Management activity should be directed towards enhancement of natural recruitment of brown trout by protection and development of spawning and nursery areas, and a concomitant reduction in stocking.

The coarse fish populations of the lower River Swale would benefit from increased recruitment arising from sustained improvement in water quality in the major tributaries such as Cod Beck, Bedale Beck and the River Wiske. Additional habitat improvement such as tree planting to provide bankside cover together with sympathetic management of existing features, would also be of benefit (see Issue 18). The construction of a fish pass at Topcliffe Weir may prove useful in allowing free movement of coarse fish throughout the lower river. The present dominance of the mid 1970s classes of chub and barbel will probably reduce in the near future, to be replaced by fish from the 1989-91 classes.

Recent monitoring studies at Mickley on the River Ure have indicated a decline in the number of downstream migrating salmon smolts, a situation which is likely to have arisen as a result of poor water quality together with low flows in the tidal River Ouse during drought conditions which prevented the return of the adult salmon to spawn. However, in 1996 juveniles were recorded at several sites in the main river up and downstream of Mickley.

Applications to abstract water from both groundwater sources and direct from the rivers Ure and Ouse for irrigation and potable supply have become increasingly numerous. Recent proposals for increased abstraction from the River Ouse are causing concern for fisheries' interests, particularly relating to mortality of fry at water intakes.

Applications have also been received for hydropower schemes at Mickley and Linton Lock that may adversely affect fisheries. It is essential that these are designed to minimise damage to fisheries and that they are monitored after installation.

Access to spawning areas is essential for the maintenance of fish populations and, therefore, possible improvements to the operation of Naburn fish pass will be examined and other passes inspected and maintained. Occasionally, accumulations of natural materials can cause problems, and gravel accumulating at the mouth of Apedale Beck has been identified as requiring action (see Issue 8 and 19).

Improvements in water quality in several upper River Ure tributaries and in the tidal River Ouse are likely to be of major benefit to both brown trout and salmon populations in the River Ure system.

Coarse fish populations in the rivers Ure and Ouse have not been severely impacted by poor water quality, however, pollution incidents and poor water quality in the River Foss and tributaries still give cause for concern. There is also continued concern at losses of fish due to stranding in river land after flood events (see Issue 8).

5.6.3 ARCHAEOLOGY AND HERITAGE

Background

The landscape of Britain contains a rich heritage of historic and archaeological features. These can vary from megalithic monuments to camp settlements, banks, ditches and mounds; Roman remains; castles and fortifications; deserted villages; ecclesiastical buildings; great halls and bridges. Many sites protected or managed for their historical interest are also valuable habitats for a range of wildlife. This is because they have often been undisturbed for a long time and are usually little affected by fertilisers and chemical sprays.

The principal legislation affecting ancient monuments in England is contained in the Ancient Monuments and Archaeological Areas Act 1979, which was subsequently amended by the National Heritage Act 1983. The Secretary of State is required to compile and maintain a schedule of monuments to which statutory protection is afforded.

Historic landscapes within the area are designated by English Heritage whilst Scheduled Ancient Monuments (SAMs) are designated by the Department of National Heritage on advice from English Heritage. Other historical and archaeological sites may fall within areas designated as Environmentally Sensitive Areas by MAFF or be covered by the Countryside Stewardship agreement with the Countryside Commission. Local planning authorities can also designate 'conservation areas', which are of particular interest for special protection and these are included in the county Sites and Monuments Record (SMR).

Local Perspective

The Swale, Ure and Ouse area has a rich and varied history with tens of SAMs within the area and hundreds of unscheduled monuments.

Yorkshire's only World Heritage Site, Fountains Abbey, is situated on the River Skell at Ripon, part of the Ure catchment. York possesses a wide range of archaeological deposits, some of which are of outstanding importance. This is reflected in the fact that York has one of only five designated Areas of Archaeological Importance under the Ancient Monuments and Archaeological Areas Act 1979. Abbeys such as Jervaulx on the River Ure and Easby on the River Swale were also established close to these rivers. Roman forts are found at Aldborough and Roecliffe; castles at Middleham, Bolton, Hornby and Constable Burton; and an ancient motte and bailey can be seen at Castle Hill on the Swale.

Recent excavations have been carried out at St Giles Hospital, near Brompton-on-Swale, where the river had eroded and partly destroyed this site. Excavations have also been carried out at Boroughbridge where the A1 widening scheme is to cover part of the Roman town there. The area around West Tanfield and Norton Conyers on the River Ure has several prehistoric henges. There are several large estates and parklands along the river e.g. Newby Hall on the River Ure, Studley Park on the River Skell, Bolton Estate at Wensley, Kiplin and Langton Hall on the River Swale.

As with the conservation value of the River Foss, the history of this river is closely linked with the history of York itself and therefore goes back for thousands of years. For example the area around the castle used to be "the King's fish pond", an extension of the River Foss providing fish for the royal table.

The River Foss flows through a designated Area of Archaeological Importance in York. The River Foss also lies adjacent to two scheduled ancient monuments in York and adjacent to archaeological deposits which are of national importance but which are not scheduled. The River Foss also passes by a large number of listed buildings of which the foundations may be affected by any water level changes.

The tidal River Ouse also has features of heritage interest such as Cawood Castle and Drax Abbey.

The above mentioned are just a few of the many important archaeological and historic sites within the area.

All county councils in the area maintain a detailed list of known archaeological sites, the Sites and Monuments Records, and these are updated as fresh information is made available as a result of new excavation and survey work. The Agency recognises the county Sites and Monuments Records as the primary source of archaeological information and advice and will consult them as a matter of course regarding such data.

Any designations will be notified to the Environment Agency who will ensure that accurate, up to date listings are maintained.

At present, legislation often only protects the monument itself or a specific building. In future, sites may well include adjacent land in context with the scheduled monument. This will have implications for the Agency where a site is adjacent or close to a watercourse.

6.0 CURRENT STATE OF THE LOCAL AREAPage
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6.1 INTRODUCTION

This Section identifies the environmental criteria required to measure the health of the environment and the standards needed to enable the well-being of natural resources, ecosystems and public health to be maintained and where appropriate enhanced.

6.2 AIR

6.2.1 AIR QUALITY

Background

The Environment Act 1995 required the Government to publish a National Air Quality Strategy which completed its consultation stage at the end of November 1996. Local Authorities will have to review the present and future air quality against standards and objectives contained within the strategy to achieve air quality standards by 2005. The Agency will work closely with the local authorities to help achieve the requirements of the National Air Quality Strategy.

The Agency will also look to produce an air quality strategy for Part A processes (i.e. those regulated by the Agency under IPC) in the area to link with local air quality plans.

The area covered is predominantly rural/agricultural in nature, but with a concentration of industry in the Selby area. In much of the area the predominant air quality factors are "domestic", e.g. domestic fuel burning, road traffic, etc. but with some impact from agriculture and the smaller industrial processes regulated by local authorities. With the exception of the large power stations, the processes regulated under IPC are not likely to have much impact on overall air quality.

In summary, it may be said that the general air quality in the area is "good" on most occasions, but with certain areas experiencing problems under specific circumstances. Other than for highly localised sources (e.g. vehicle exhaust fumes adjacent to a busy road) the impact on air quality of the larger discharges is very dependent on weather conditions, particularly wind direction and "inversion conditions" (a weather condition when aerial discharges from an elevated stack cannot escape upwards, and can even "ground" i.e. be brought back to ground prematurely). Areas of note include:

- York - impact of traffic giving "poor" local NO₂ levels at rush hour;
- the southern part of the area - SO₂ "spikes" (i.e. short term excursions) into poor quality when the wind is from the south and weather conditions cause the discharges from the industry in the south to be felt.

Monitoring Techniques

Air quality is monitored by the local authorities, as summarised below, and by some operators themselves; there are no national air quality monitoring stations in the area. Each local authority addresses the issues which it has seen as particularly relevant, and collectively, the authorities are looking at drawing together the data in a consistent manner. The Agency will be looking more closely at assessing the overall quality of air so as to be able to produce a detailed statement of air quality. A key to the effective air quality monitoring includes:

- monitoring for ammonia (NH₃), nitrogen dioxide (NO₂), sulphur dioxide (SO₂), and ozone (O₃);
- "real time analysis" - continuous automatic monitoring giving an instantaneous reading;
- "diffusion tubes" - manual method giving reading at the time of measurement.

The following monitoring is undertaken in the LEAP area:-

Hambleton District Council

NO₂, SO₂ and NH₃ are monitored at 5 sites using diffusion tubes.

Richmondshire District Council

NO₂ is monitored using diffusion tubes.

Selby

NO₂ monitoring has just commenced in Selby town to identify effects of vehicle emissions.

Smoke and SO₂ are monitored at Tadcaster and Selby.

Rain acidification is monitored at Thorganby.

Particulate deposition is measured at sites adjacent to Drax Power Station and Gascoigne Wood coal mine (together with "control" points some distance away).

City of York Council

A real time monitor is installed in Exhibition Square. It is installed 1m above ground level to address specifically the impact of road traffic emissions. Monitoring is carried out for NO₂, SO₂, and O₃.

Rural O₃ is measured at Dunnington (5m east of York).

From the early 1960s until recently smoke and SO₂ have been measured in the city centre but these have now been replaced by the arrangements above.

Current Status

The paragraphs below describe the factors which are taken as indicative of air quality several local authorities produce useful leaflets giving similar information. It should be noted that not all the factors described below are currently monitored in the area.

Ozone

This gas is commonly known as the "sunshine pollutant" as it is formed as a result of the reaction between oxides of nitrogen (NO_x), hydrocarbons and oxygen in sunlight. In the upper atmosphere ozone forms a barrier to harmful ultra-violet radiation. At ground level however it is a poisonous gas and a photochemical pollutant. As the most common photochemical oxidant, ozone is a good indicator of photochemical pollution in general.

Ozone concentrations tend to increase in the summer months especially when photochemical pollutants are trapped at ground level by atmospheric temperature-inversion conditions. Ozone has a number of health effects, especially eye, ear and throat irritations, nausea, headaches and severe breathing difficulties for asthmatics. The gas causes extensive damage to foliage especially crops and forests.

World Health Organisation (WHO) air quality guidelines recommend that 8 hourly concentrations should be below 60 parts per billion (ppb). Guidelines to protect vegetation are 100 ppb for hourly average concentrations and 30 ppb for daily averages. The UK Expert Panel on Air Quality Standards (EPAQS) has recommended a limit of 50 ppb measured as an 8 hour running average which is the proposed draft National Air Quality Strategy Standard.

High Muffles (North Yorkshire Moors) has a continuous monitor and this station forms part of the national network of air quality monitoring stations.

Table 4: Ozone levels

Monitoring Location	Ozone annual average (ppb)			
	1992	1993	1994	1995
High Muffles	29	29	29	28

Table 5: Ozone and EPAQS

Monitoring Location	Number of hours in excess of EPAQS (50 ppb on 8 hr rolling average)			
	1992	1993	1994	1995
High Muffles	489(39 days)	188(24 days)	253(28 days)	338(29 days)

Nitrogen Dioxide (NO₂) and Nitrogen Oxides (NO_x)

Oxides of nitrogen are formed by a reaction between nitrogen and oxygen during combustion processes. The main sources are power stations, vehicular emissions and other industrial sources. The gases are released as nitrous oxide (NO) which is converted to the more toxic NO₂ in the presence of sunlight. This may create a photochemical smog. The nitrogen dioxide is an irritant, with similar short term health effects as for ozone although little is known about the long term health effects of exposure. Oxides of nitrogen can affect plant growth, contribute to acid rain and exacerbate atmospheric ozone levels. Nitrogen oxides are also greenhouse gases. Little is known about the potential for long distance movement of the gases and the EC has defined them as "secondary transborder pollutants".

The emissions (England/Wales) of NO_x in 1990 were estimated as being 2.7 million tonnes an increase of 0.5 million tonnes per year from 1985 emission information. The increase has been attributed to the increase in vehicular emissions and the latter source now accounts for nominally 60% of the total UK emissions. Emissions from power stations have declined substantially through replacement of some of the older coal stations with gas powered units.

European Directive 85/203 sets limits on NO₂ to protect human health at 200 µg/m³ or 97.5 ppb (98 percentile of hourly averages). The WHO hourly guideline concentration is 110 ppb, with the daily guideline being 80 ppb and the annual guideline being 26 ppb. Guidelines to protect vegetation are 50 ppb for 4 hourly concentrations and 16 ppb for annual averages.

The proposed National Air Quality Strategy (Draft) Standards are 104.6ppb (hourly mean) and 20ppb (annual mean) for NO₂.

Volatile Organic Compounds (VOC)

These gases include hydrocarbons, halogenated organics and benzene. They originate from oil, petrol, solvents and some industrial processes. These chemicals form tropospheric ozone and photochemical smogs in the presence of sunlight. Their health effects are varied: some are carcinogenic while others can cause eye, throat and chest irritations.

Benzene and 1,3 butadiene are substances that can cause cancer. EPAQS have advised that running annual means of 5 and 1 ppb respectively present small risks to health. Their values are proposed, in the draft National Air Quality Strategy, as standards.

In the UK the VOC emissions are rising slowly and emissions from vehicular traffic are forming an increasing proportion of this total. It is expected that the compulsory introduction of catalytic converters will have decreased VOC emissions from the end of 1993 onwards.

Total VOC releases nationally in 1990 were approximately 2.7 million tonnes with 35% coming from road transportation and 50% from solvent usage and industrial processes.

Sulphur Dioxide (SO₂) and Smoke

Sulphur dioxide (SO₂) is an irritant to eyes and throat and can cause serious harm to people with respiratory problems. The gas reacts with water in the atmosphere to form weak sulphuric acid (i.e. acid rain). Acid deposition, both wet and dry, causes much damage to trees, crops and buildings.

The major source of SO₂ is from the combustion of fossil fuels where sulphur, trapped in the fuel (especially coal), is released on burning. Coal fired power stations are the major source of SO₂ with oil burning processes and vehicles also contributing to the emissions.

The largest proportion of SO₂ comes from coal burned at power stations for electricity generation. However it should be noted that national SO₂ emissions have reduced by over 30% in the last 10 years, a reduction from 4,898,000 to 3,774,000 tonnes per year. In particular, the Drax station is now fitted with FGD (Flue Gas Desulphurisation) and this has resulted in a major reduction in the SO₂ emitted.

Smoke is a mixture of suspended solids and liquids produced by the incomplete combustion of fuels. Smoke can cause respiratory problems, and in extreme cases particulates may completely coat the lungs and cause asphyxiation.

Smoke emissions from coal burning have halved nationally in the last 10 years whereas diesel fumes have almost doubled. Total emissions of smoke have declined by around 20% since 1980.

There has been a significant reduction in the SO₂ levels in the last 10 years. The annual reduction in levels has been between 15 and 50%. The vast reduction in SO₂ concentrations can be attributed to initiatives such as the creation of smokeless zones, the increase in the use of gas fired central heating systems, the reduction in the use of open coal fires and the reduction in the number of households receiving free or subsidised coal. There is a continuing programme in the area of introducing smokeless zones in the area which are designated and enforced by district councils.

Average values can be misleading as high concentrations, which cause maximum damage to crops, trees, buildings and human health, can be dispersed relatively quickly and are not therefore immediately obvious from annual average data.

The EPAQS has proposed an SO₂ limit of 100 ppb for a 15 minute period. The European Commission has set a daily limit of 80 ppb and an annual average of 45 ppb (dependent on associated smoke level). The EPAQS limit has been proposed in the National Air Quality Strategy draft document.

The European Commission guide values (1982) for smoke particles are linked with sulphur dioxide levels. The lowest smoke particle level considered is 80 µg/m³ as an annual average. WHO guidelines for black smoke are 50 µg/m³ as an annual average and 125 µg/m³ as a 24 hour average.

Acid Deposition

This phenomenon is caused by airborne pollutants such as SO₂ and NO_x which readily dissolve in rain water forming weak sulphuric and nitric acid. The resultant rain water can be acidic in nature having a pH value of less than 4. It should be recognised that it is not only the concentration of acids which is important, but also the total rainfall at a site. Areas with the highest rainfall also tend to have the highest amounts of wet deposited acidity. Dry deposition involves the settling out of acidic particles from the air and can cause extensive damage to crops and buildings, however this tends to be localised in nature.

The main contributors to the acid rain problem are coal fired power stations, especially those burning coal with a high sulphur content. These emit SO₂ which reacts with water vapour in the atmosphere to form weak sulphuric acid. Similarly burning coal with a high chlorine content contributes to the formation of hydrochloric acid. Emissions of SO₂ are decreasing as desulphurisation technology is installed at power stations.

A major concern with acid deposition is that it can travel long distances before causing damage. The reason for long distance transportation of pollutants is a direct result of earlier pollution abatement actions following the Clean Air Act of 1952. It was thought that by using high chimney stacks, such as those at the large power stations, the emissions would be diluted and dispersed but this policy only spread the problem to other areas.

The local effects of acid rain have been noted for over 100 years but the scale of the problem has now increased, placing it on the international agenda. Recent simulation modelling suggests that Europe will lose one sixth of its potential wood production from forests due to air pollution before 2005. Losses could be greater than this when the impact of soil erosion, flooding, habitat destruction and the loss to the carbon cycle are taken into consideration.

Acid deposition also affects water courses, both directly and through the increased acidity of run-off waters, and can have profound effects upon soils. Metals such as aluminium can be leached from soils, progress into water courses and ultimately find their way into drinking water supplies. Other metals are also leached from soils together with many nutrients, which can cause problems for the long term health of the soil (see Issue 12).

Routine monitoring results are given below:

Table 6: Acid rain deposition

Monitoring Location	Precipitation-annual mean sulphur content ($\mu\text{eq/l}$)			
	1992	1993	1994	1995
High Muffles	71	56	60	51

The information in Table 6 suggests that there is a downward trend in the sulphur content of the rain measured at High Muffles. However, an interpretation of trends in the monitoring data of the last ten years monitoring data is in preparation as part of the formal publication of the 1995 Monitoring Network information.

Lead

Lead has major health effects particularly on children. The National Society for Clean Air estimates that 80% of lead in the body originates from the atmosphere. The main sources are from petrol, coal and metal works. Lead in petrol has been reduced by 25% of its 1980 level. Since 1986 lead-free petrol has been made available at a cheaper price which has led to a reduction in lead emissions of almost 6,000 tonnes per annum.

There are three national monitoring sites in the North East Region (Newcastle, Tynemouth and Leeds) and lead levels at these sites have followed the national trend and dropped considerably over the last 10 years.

Slight increases in lead levels have occurred in recent years, owing to an increase in overall car ownership. Lead levels are expected to stay constant for a while as increasing car ownership is balanced against the reduction in circulation of older cars which use leaded petrol. A lead limit of $0.5\mu\text{g}/\text{m}^3$ as an annual mean is proposed within the draft National Air Quality Strategy.

Particulates

Sources of particulate air pollution can be man made or biological. Major sources of man made dusts include fuel combustion, domestic fires, road dust, photochemical

aerosol, NO₂ and organic gases. Dusts of biological origin are generally derived from wind-blown plant fragments or soil particles but can result from sea spray.

The adverse effects of particulates on human health depend on chemical composition, such as the presence of trace metals and hydrocarbons, and on size, which determines the site of deposition on the respiratory tract. Epidemiological evidence suggests that adverse health effects may be caused by particulates of below 10 µm diameter (PM10). EPAQS has proposed a PM10 limit of 50 µg/m³ as a 24 hour rolling average and this appears in the draft National Air Quality Strategy.

Industrial Monitoring by the Environment Agency.

The concept of Integrated Pollution Control (IPC) is "Best Available Techniques Not Entailing Excessive Cost" (BATNEEC) to prevent, minimise and render harmless prescribed substances and render harmless non-prescribed substances. Another requirement is to have due regard to the "Best Practicable Environmental Option" (BPEO) if the release can impact on different media. The key part to controlling IPC regulated processes is the precautionary principle - *prevent the release in the first place*.

IPC includes self-monitoring supported by audit by the Agency. This means that the operator monitors the point source releases at an agreed frequency, using agreed methods of analysis. The results of the monitoring and an estimate of the annual releases are placed on public registers. Inspectors check the operators' monitoring protocols, sampling and analytical systems during site inspections. The Agency also performs independent monitoring to confirm the point source releases from the IPC processes. The results of the Agency's monitoring activities are placed on public registers.

Eventually it is intended that air quality targets will be set at two main levels: one will be a guideline figure to represent the level at which the pollution has either been rendered harmless to health or the environment, or at which it is unlikely that any significant benefit could be obtained by expending further reasonable costs on abatement because of background sources or other factors; the other will be a trigger level which distinguishes when air quality is so poor that an immediate response is justified to prevent serious damage.

Complex interactions between weather conditions, chemical processes, distances that air pollution can travel and the number of possible sources, make understanding cause and effect and attributing responsibility difficult in cases of air pollution. Prevention therefore depends upon the establishment of air quality targets.

The Government intends to introduce, in due course, mandatory duties on local authorities to assess local air quality and, where it is shown to be necessary according to nationally agreed criteria, prepare local air quality management plans for operation in defined areas where targets are unlikely to be met.

The "alert" threshold for any pollutant or combination of pollutants would define the level at which there is a potential risk of immediate serious damage. If the level were reached or approached in a particular area, it would trigger a mandatory obligation on the relevant pollution control authorities, including the Agency, to take remedial action. The values have been proposed in draft within the National Air Quality Strategy documentation.

An increase in the number of air quality monitoring sites would further assist in identifying local air pollution, and publication of data that does exist should raise awareness of local air quality.

Integrated Pollution Prevention and Control

A European Directive on Integrated Pollution Prevention and Control (IPPC) has recently been passed. This Directive will be implemented in UK legislation within the next few years.

The IPPC Directive extends integrated pollution control to a much wider range of human activities. For example certain agricultural operations, such as intensive rearing of poultry or pigs are included in the Directive. The impact of the Directive within the area requires assessing (see Issue 22).

6.3 WASTE

6.3.1 WASTE MANAGEMENT

Background

Under the terms of the EPA 1990, the Agency issues waste management licences permitting the disposal, storage, transfer and treatment of controlled wastes. Certain designated methods of handling waste are deemed to be exempt from the licensing process but those carrying out these activities are obliged to register with the Agency, who in turn maintain a register of such schemes.

Carriers of waste materials are obliged to register with the Agency and receive a carrier registration document. Responsibility for investigating incidents of unauthorised tipping of wastes (fly-tipping) and subsequent enforcement action is another Agency duty.

The 1995 Environment Act introduced additional duties in two notable areas. Producer responsibility schemes place an obligation on the producers of certain designated waste streams to take responsibility for their wastes. The first of these, on packaging-waste, comes into effect in the summer of 1997 with the aim of increasing the amount of packaging material which gets reused and recycled. The Agency will regulate this.

The other key change introduced by the 1995 Act was with regard to contaminated land. Identification of the sites of contamination remains the responsibility of the local authority but the remediation of certain sites, designated 'special sites', will become the responsibility of the Agency in some circumstances.

The key sustainable development objectives for waste and waste management are to minimise the amount of waste which is produced, to make best use of the waste which is produced and to minimise pollution from waste. The UK has defined a hierarchy of waste management options: reduction of waste, re-use of waste, recovery - including recycling, composting and energy recovery - and finally, disposal.

'The UK strategy for Sustainable Development' aims to move waste disposal higher up the waste hierarchy, taking into account the BPEO.

In working out the BPEO the environmental and economic costs are to be taken into account. It is recognised that for some wastes disposal to landfill maybe the BPEO.

Indicators of Sustainable Development

A number of indicators for sustainable waste management have been established by the DoE within its publication "Indicators of Sustainable Development for the United Kingdom" and these include:

- the quantities of waste generated by various sectors;
- the quantities of waste recycled;
- the quantities of waste from which energy is recovered;
- the quantities of waste finally disposed of.

These indicators allow the Government's Waste Strategy to be monitored and provide a basis against which to measure waste management practices. They help focus on the key issues and highlight trends. To achieve more sustainable waste management practices, quantifiable targets should provide a mechanism to move the emphasis up the waste hierarchy.

The Government has developed a number of indicators of sustainable development regarding waste and has set targets for its recovery. Below is a summary of the current situation.

Current Status

Household Waste

Household waste accounts for only 4-5% of the 400 million tonnes or so of waste produced in the UK each year. However, it is important that individuals as well as industry and government act to reduce waste production by recycling, re-using and composting waste wherever possible, and by buying long-life re-usable and environmentally friendly products with minimal packaging. Around 30% of household

waste comprises paper and cardboard, 20% is organic matter and 25% is glass, metal or plastic. Approximately 50% of this is recyclable.

The amount of household waste per head of population in England and Wales has risen by only 2-3% over the last ten years whereas household expenditure rose by 30% over the same period. In 1991/92 amounts of waste arising totalled 293kg per head. This much slower rise in per capita waste arisings may be due to:

- increased recycling;
- reducing the weight of packaging;
- substitution of plastic for glass.

To encourage the recovery of waste, including the recovery of energy from waste, the Government has set a target for the recovery of value from 40% of municipal waste in England and Wales by the year 2005. This is in addition to its target to recycle or compost 25% of household waste by the year 2000.

In the last financial year the six largest local authorities collected over 190,000 tonnes of household waste and recycled just over 5.6% of this. As household waste is collected on a Council boundary basis, rather than on a catchment basis, this includes wastes collected and recycled outside of the area.

Individual councils vary in the amounts of waste they recycle. To a degree this is part of the democratic process in that the priority given to local recycling reflects local budgeting priorities. However, it is also the case that recycling in rural areas tends to be more expensive and therefore harder to justify than in more highly populated areas. York City Council previously achieved a level of 10% recycling whereas Richmond has recycled less than 5% of its household wastes.

Industrial and Commercial Waste

Industrial and commercial waste in the Plan area is estimated to amount to 85 million tonnes per annum and its composition is probably changing as a result of the decline in traditional heavy manufacturing industries, such as steel making and ship-building, and the expansion of the electronics industry. Similarly, changes in the size, structure and working practices of the service sector are affecting the nature and importance of commercial waste.

The Agency is currently progressing initiatives to improve data on waste arisings and disposal, particularly in relation to industrial and commercial waste.

Accurate figures on waste arisings in the Plan area do not currently exist. However, it is known that the amount of industrial and commercial waste generated is, with one notable exception, quite low. In total less than 1 million tonnes of industrial and commercial waste is disposed of within the catchment. Over half of this, approximately 500,000 tonnes, is generated by National Power at Drax.

National Power already sell on some of the fly-ash which it generates as an alternative

to landfilling and is investigating the possibility of selling this material from its disposal mound.

Most of the remainder of industrial and commercial waste arises from construction and demolition work and is, in many cases, suitable for re-use in various processes, often being crushed and screened. Construction waste is a priority waste stream and may be subject to regulations similar to those shortly to affect the packaging industry.

The Agency is currently working towards carrying out a survey of industrial and commercial waste producers to improve data on waste arisings.

Special Waste

Special waste arisings account for less than 1 % of the total waste stream and arise not only as by-products of industrial processes but also as spent or out of date materials from the business sector. The quantities involved fluctuate annually and reflect:

- changes in manufacturing processes;
- changes in demand for certain products;
- the implementation of waste minimisation techniques;
- an increase in recycling, re-use or recovery of waste.

The main special waste stream generated and disposed of within the catchment is asbestos. Typically 100-200 tonnes per annum are disposed of within the area. With the recent revision of the definition of special waste, encompassing wastes previously not regarded as such, the amount of such wastes generated is expected to increase.

Household Waste Recycling and Composting

The proportion of household waste recycled is an important indicator of the extent to which individuals themselves are prepared to take action to help the environment.

Currently only around 5 % of household waste in the UK is recycled or composted, with approximately 90 % going to landfill and the remaining 5 % being incinerated. A target has been set to compost 1 million tonnes of organic household waste per annum and for 40 % of domestic properties with a garden to carry out composting by the year 2000.

It is also proposed that 80 % of households should have easily accessible recycling facilities by the year 2000. This means either the provision of kerbside collection schemes or "stand alone" facilities for 3 or 4 materials within 1/2 mile, or within 2 miles where the recycling facility is located with other frequently used facilities.

There are over 150 recycling sites in the catchment. The Council of Ryedale in particular has made excellent provisions for residents wishing to recycle materials with the introduction of mini-recycling centres. This is reflected in the high level of household waste recycled - almost 10 % - very high for a rural area. The other rural councils are

expected to follow this lead.

Recent experimental trials of home composting in Ryedale and Selby have shown that the amount of wastes householders dispose of can be reduced significantly; a 10% reduction appears to be sustainable. Given the costs of transporting and disposing of this waste to landfill it is expected that this will increase.

Materials Recycling

Recycling of waste materials can contribute to the conservation of raw materials, reduce pollution from waste disposal and production processes and help make reductions in energy use. With this in mind, a target has been set to recycle 58% of waste glass by 2000 and to ensure that 40% of UK newspaper feedstock is waste paper.

The Producer Responsibility Initiative is a new method for promoting the recovery of value from waste and is designed to ensure that industry takes responsibility for waste arising from the disposal of its products. The most advanced producer responsibility scheme is found in the packaging industry and here the target is to recover 50-65% of packaging waste by 2001 and to recycle 25-45% of this, with a minimum of 15% recycling for each material. A number of other industries are involved in the initiative including those involved in the recovery of scrap vehicles. Here targets have been set to recover 95% of end of life vehicles by 2015, 65% of scrap tyres and to recycle 90% of waste lead batteries.

There are not thought to be many industries which will be affected by the EC packaging waste directive which was introduced in early 1997.

Energy from Waste

Where the environmental and economic costs of recycling are high, energy recovery from waste may be a more sensible option. This can be achieved through:

- a heat exchange process when waste is burned in either a combined heat and power plant. It is now government policy to encourage combined heat and power schemes through the non-fossil fuel obligation (NFFO);
- by using methane from the degradation of putrescible waste within landfill sites as a fuel to produce electricity;
- using methane to produce electricity from anaerobic digestion plants.

Since 1992 there has been a sharp increase in the amount of energy recovered from wastes and from landfill gas under the NFFO in England and Wales.

Around 1.6 million tonnes of waste was incinerated with energy recovery in 1994. The target is to work towards generating 3,500 megawatts from renewable resources by the year 2000. Waste incineration with energy recovery is not thought to be a viable option within the area, given the low volumes of wastes and the high distances over which wastes would have to be transferred.

Energy recovery from landfill is being investigated at two of the sites which receive household wastes - the main putrescible, and therefore methane producing, waste - and the nature of the other sites which take these wastes means that they too may be suitable for the installation of landfill gas utilisation schemes.

Waste going to Landfill

Landfill is the most appropriate disposal option for many inert wastes and for wastes which are difficult to burn or recycle, and it will remain the predominant waste disposal route for many years. Currently about 124 million tonnes of controlled waste go directly to landfill each year in the Plan area.

6.4 WATER

6.4.1 WATER QUALITY

Background

Surface Water

Rivers and tributaries in the Swale, Ure and Ouse catchment are of generally high quality, suitable for potable supply and capable of supporting trout or high class coarse fisheries. A comprehensive water quality monitoring programme enables the Agency to assess whether or not the rivers meet their required quality standards.

Water quality is assessed against the following measures:

- compliance with River Quality Objectives (RQOs);
- compliance with EC Directives;
- North Sea Reduction Programme;
- Biological Classes.

The Agency uses two principal schemes for the reporting and management of river water quality: the general quality assessment (GQA) scheme; the statutory water quality objectives (WQOs) scheme.

The GQA scheme is used to make regular assessments of the quality of rivers to monitor trends over time and to compare rivers in different areas. Four components are being developed for the GQA assessment - general chemistry, nutrients, aesthetics and biology - each providing a discrete "window" on the quality of the river stretches. The general chemistry component of the GQA is now in use. It is made up of six grades (A to F) defined by standards for Dissolved Oxygen (DO), Biochemical Oxygen Demand (BOD) and Total Ammonia (see Appendix C). In the GQA chemical quality system A and B are classed as good quality, C and D are fair quality and E and F are poor quality. The remaining three GQA windows are under development and will be applied when available. See Figure 17.

The Water Quality Objective (WQO) scheme, establishes quality targets based on the uses of the watercourse. The standards defining the five River Ecosystem (RE) Use Classes, addressing the chemical quality requirements of different types of aquatic ecosystems, were introduced by the Surface Waters Regulations 1994 under the River Ecosystem Classification (see Figures 18 & 19). These uses are likely to include: River Ecosystem; Special Ecosystem; Abstraction for Potable Supply; Agricultural Abstraction; Watersports. For each stretch of river an RE class WQO will be assigned including a date by which this level of water quality should be achieved. Until WQOs are formally established by legal notice served by the Secretary of State, and therefore exist on a statutory basis, they will be applied on a non-statutory basis with appropriate RE classes and target dates, when the objectives are to be achieved. Standards for further uses are still under development.

Water quality targets are set for both long term and short term. Short term targets are realistic targets to be achieved by 2005 and long term targets which are achievable aspirational targets and may depend on AMP3 expenditure post 2005 to be achieved. Details of the water quality criteria for the River Ecosystem scheme are shown in Appendix B.

The Agency is responsible for the protection of controlled waters from pollution. Effluent discharges are controlled by consents and authorisations which impose conditions to regulate the quality and quantity of the discharge. Conditions are set taking account of the upstream quality, the dilution available and the quality required downstream. The Agency is continually reviewing discharge consent conditions to ensure that the receiving watercourse achieves the necessary standards. Review may result in the variation of consent or an authorisation. When setting new consent standards, the Agency needs to identify a reasonable and practicable timescale for the discharger to carry out required improvements.

Biological criteria form an important component of water quality monitoring, as they provide an assessment of the impact of discharges on the aquatic environment. The biological classification used by the Agency is based largely on the presence and abundance of macro invertebrate species. The status of invertebrate communities can be used to monitor the overall long term health of the river.

Biological water quality can be expressed in various ways, but the most convenient method is one which parallels the chemical water quality classification and has classes ranked 1A, 1B, 2, 3 and 4. The biology classes are prefixed with B and indicate 'very good', 'good', 'fair', 'poor' and 'bad' quality. These classes are derived from the interpretation of the types and numbers of the freshwater invertebrate animals present, and knowledge of their tolerance or sensitivity to (principally) organic pollution. More recently the biological GQA system has also introduced biological classes A-F, based on the match between target values for biotic scores and actual results.

SWALE, URE
RIVER CHEM
GOA GR

KEY

- CLASS A
- CLASS B
- CLASS C
- CLASS D
- CLASS E
- CLASS F
- UNCLASSIFIED

0 2 4 6 8 10 km
Scale

Groundwater

Water bearing rocks, known as aquifers, provide storage for considerable volumes of high quality water which often requires little or no treatment before being put into supply. Groundwater also provides the baseflow of many river systems which may be used for drinking water, industrial and agricultural purposes as well as for fishing and other recreational activities. The quality of this baseflow is therefore an important aspect in maintaining surface water quality in these areas.

Once polluted, groundwater is difficult, and sometimes impossible, to rehabilitate and it is therefore vital that the quality of this resource is protected. Under the Water Resources Act 1991, a framework is established for water quality objectives. The framework applies to both surface water and groundwater and includes a system for classifying water quality which would enable the Secretary of State to set WQOs. These would require that specific targets for water quality should be achieved and maintained.

At present, no WQOs have been set for groundwater. However, in order to set targets at some point in the future, and to comply with the Agency's general duty under the Water Resources Act to monitor controlled waters, it is important that baseline data is available on groundwater quality. The Agency has therefore established a groundwater quality monitoring network across both the Plan area and the Region as a whole. The network was established in 1995 and will be used both to assess current groundwater quality and to identify trends that may occur in the longer term. Data may also highlight areas where groundwater has become polluted and further investigation is required.

In addition to a sampling network, the Agency document entitled "Policy and Practice for the Protection of Groundwater" provides guidelines and the measures that the Agency will seek to take to protect both the quality and quantity of the groundwater resource.

The policy classifies rock types into major aquifers such as the Magnesian Limestone and Sherwood Sandstone; minor aquifers such as the Carboniferous Limestone and Coal Measures; non-aquifers such as the Mercia Mudstone. The vulnerability of the aquifer to pollution is assessed from the type and thickness of soil and drift cover. A series of protection zones will be delineated for the major groundwater sources where the water is used for drinking water supplies or other purposes such as food processing or water bottling. The document sets out guidelines to be used as a framework for decision-making on groundwater issues and also contains a number of different policies which are aimed at protecting the groundwater resource. The policies, which are not statutory, relate to potentially polluting activities such as landfill, contamination of land, use of soakaways (including road and rail drainage), effluent discharges and diffuse sources of pollution.

Current Status

Surface Water

Compliance with River Water Quality Targets for the area are shown in Figures 18 and 19. The catchment as a whole is one with very good water quality with the exceptions stated below.

The River Swale

The 'main river' meets the long term chemical quality objective for the whole of its length, whereas a major tributary, the River Wiske, significantly fails to meet long term objectives for DO and ammonia parameters.

Upstream of Northallerton on the River Wiske and Willow Beck, point and diffuse source farm pollution are the suspected causes (see Issue 4). The sewage effluent discharges from Northallerton and Romanby STWs downgrade the remainder of the River Wiske to the confluence with the River Swale also causing failure of the EC Fisheries Directive. Improvements are already underway at these two works and are due for completion by end August 1997 (see Issue 9).

Other tributaries, including Cod Beck, currently meet long term objectives with the exception of Cundall Beck where progress is being made on improving minor sewage effluent discharges and reducing farm pollution.

The River Ure

The main-river Ure fails the long term objective for BOD in two reaches, the upper river based on the Worton sampling point and the Ripon/Boroughbridge reach. It is believed that the reasons for those failures are not simply discharge related but are probably associated with secondary eutrophic effects and drought.

The River Ouse

The River Ouse south to Naburn STW continues to meet the long term objective. Below this point to the tidal limit at Naburn Weir it fails to meet its long term objective in terms of ammonia. This is due to the impact of the discharges from Naburn STW and will be addressed when scheduled improvements under the UWWTD are implemented.

The tidal River Ouse from Selby downstream significantly fails to meet the long term objective due to low dissolved oxygen levels. The causes of this oxygen depletion are the discharges in the Selby area and the possible re-suspension of organic solids due to strong tidal currents in the lower river; this latter phenomenon is the subject of an investigation by Sheffield University. Furthermore, significant reductions in the BOD load from the Selby discharges have been negotiated and will take effect from 2000.

SWALE, URE AND OUSE AREA LONG TERM RIVER QUALITY OBJECTIVES

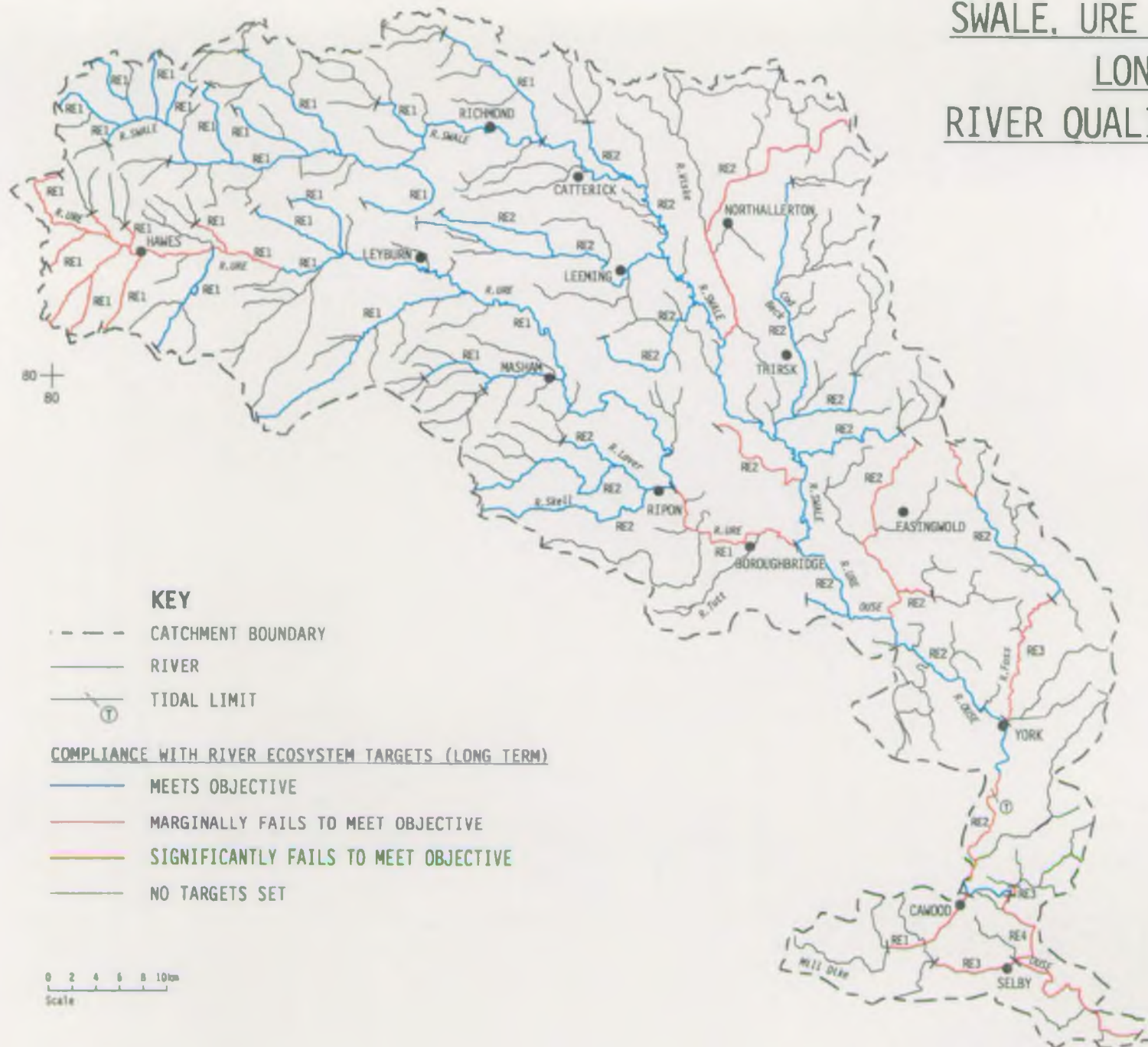


Figure 19

SWALE, URE AND OUSE AREA SHORT TERM RIVER QUALITY OBJECTIVES

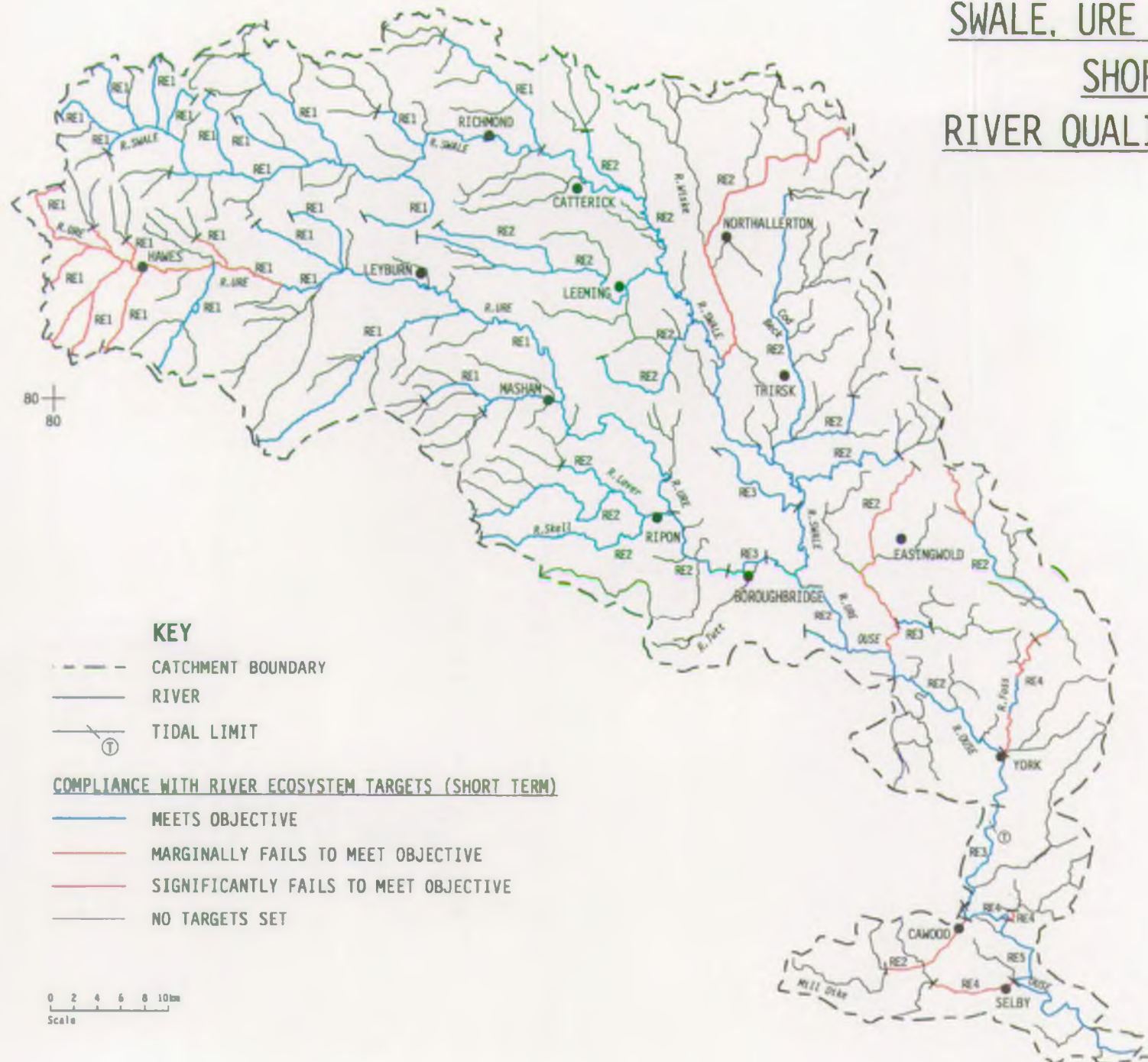


Figure 18

The River Kyle and New Parks Beck drain an area in which intensive agriculture predominates and there are also a number of discharges from sewage treatment works. The long term objective for DO is not being met with a significant failure on New Parks Beck. Pollution prevention campaigns are already underway on this catchment (see issue 4). The upper reaches of the River Foss fail to meet the long term objective in respect of BOD. In routine sampling for classification purposes two samples had elevated BOD levels believed to be due to a one-off pollution incident, possibly agricultural in origin. Regular inspections have shown that there is no chronic pollution problem in the area.

At present the lower reaches of the River Foss significantly fail to meet the long term objective for DO. This is due to the impact of sewage discharges, primarily the one at Walbutts at Strensall. These works are scheduled for improvements under UWWTD which will reduce the nutrient input into the river and, in turn, should improve the natural DO levels. Both Riccall Dam and Selby Canal fail to meet long term objectives for DO. Both watercourses are slow moving, with extensive weed growth in the warmer months and it is believed that the low DO levels are a natural phenomenon linked to the weed growth.

Selby Dam is a typical lowland stream which is regularly managed by the local drainage board. It is believed that the failures are due to be the impact of one of the tributaries, Green Dyke. This stream serves the Sherburn Industrial Estate, an area which is shortly to be the subject of an intensive pollution prevention campaign (see Issue 6).

The catchment of Selby Dam is predominantly arable agriculture and it is believed that diffuse run-off pollution is affecting water quality. It is expected that this problem will be addressed in the future by a pollution prevention campaign incorporating farm visits.

The biological water quality of the River Swale is very good in the upper and middle reaches and good in the lower section. The quality of the tributaries in the upper reaches is generally very good but a few small watercourses are of fair quality. Birkdale and Whitsundale Becks have fauna indicative of acid conditions.

Biological water quality for the catchment based on 1992-5 data is shown in Figure 20.

The biological water quality of tributaries in the middle and lower reaches of the River Swale varies from very good to poor. Bedale Beck, Cod Beck and the River Wiske systems are the main tributaries of the lower River Swale and the quality in these subcatchments ranges from very good to poor. STW discharges and farm effluents are the main causes of deteriorations in quality.

The biological water quality of the River Ure is similar to the River Swale, being very good in its upper and middle reaches. It supports important populations of the native freshwater crayfish.

Prolific algal and higher plant growth in the Bainbridge to Aysgarth area indicates

slightly eutrophic conditions in this stretch. Good water quality is maintained in the lower reaches and most of the tributaries are of very good or good quality. Only a very small number of watercourses, notably Holbeck and the River Tutt, are of fair quality. Deterioration is due in the main to the effects of STW discharges and farm effluents.

The River Ouse is of good to poor biological water quality in its non-tidal reaches above Naburn Lock; the invertebrate community is characterised by large molluscs, such as river snails and swan mussels. The tidal reaches are of poor or bad quality and have a restricted fauna of worms and shrimps tolerant of brackish water.

The two main tributaries to the River Ouse are the rivers Foss and Kyle. The biological water quality of the River Kyle has improved in recent years and is fair along its entire length, the quality of its tributaries ranges from very good to poor. The River Foss system is also of mainly fair to poor quality with a small number of tributaries having bad biological water quality. Farm and, in its lower stretches STW discharges, are largely responsible for the deterioration in both rivers. The upper Foss is of a better quality (good) and holds a small population of native crayfish.

The biological water quality for the Swale, Ure and Ouse catchment based largely on 1995 data is shown on Table 7.

Table 7: Summary biological statistics showing number of sites sampled and percentage of sites of each biological GQA class 1995

Biological Class	River Swale		River Ure		River Ouse (non-tidal)	
	No.	%	No.	%	No.	%
A/excellent	5	36	8	73	5	28
B/good	3	21	3	27	8	44
C/fairly good	4	29	-	-	1	6
D/fair	-	-	-	-	3	17
E/poor	1	7	-	-	3	51
F/bad	-	-	-	-	-	-
not classified	1	7	-	-	1	5

[illegible]

Groundwater

Within the Plan area there are 76 sampling points which are incorporated into the Dales Area groundwater quality sampling network. These are sampled on a biannual or quarterly basis and the results will be used to assess the baseline groundwater quality of the major aquifers such as the Sherwood Sandstone and the Magnesian Limestone.

Overall groundwater quality is good within the Area and there are no known major problems of groundwater contamination. Locally however, there may be variations in groundwater quality. For example, some sources, particularly in the Sherwood Sandstone, have shown increasing levels of nitrate, which originate from the use of agricultural fertilisers. Nitrate Vulnerable Zones (NVZ) have been designated around some public water supply sources, within which farming practices have to comply with MAFF guidelines for the application of fertilisers. Only one abstraction has been designated within an NVZ in the Area: Yorkshire Water's abstraction at Brayton Barff.

Groundwater quality is not only affected by potentially polluting activities, but also varies naturally with different rock types. In the Sherwood Sandstone high levels of iron and manganese may occur, while the Magnesian Limestone may have elevated levels of sulphate. This occurs particularly where the limestone is confined by the Permian Marls.

In Selby, there are also localised water quality problems, where levels of chloride have increased in the Sherwood Sandstone. Many abstraction licences in the Selby area therefore contain conditions which require the level of chloride to be monitored, and in some cases, for abstraction to be restricted when the level exceeds a level specified on the abstraction licence.

6.4.2 WATER QUANTITY

Background

Under the Water Resources Act, 1991, the Agency has a duty to conserve, redistribute, augment and ensure the proper use of water resources whilst at the same time conserving or enhancing the environment.

In 1994, following both a report by consultants "Water Resource Development Options For Yorkshire", (Halcrow, 1993), and public consultation the Region published its Regional Water Resources Strategy. Within the Region, water is used for a variety of purposes including cooling, food processing, irrigation, fish farming, bottling, and private domestic supplies. However, the largest demand on the water resource is from the water companies who abstract water from reservoirs, rivers, springs and boreholes for public water supply to their customers. For this reason, the water companies are dealt with separately within the Regional Strategy.

Forecasting long term changes in demand is a difficult and uncertain process. A large number of assumptions need to be made in relation to what may or may not happen

over the Plan period, which is typically 25-30 years. These assumptions relate to factors such as expected population growth, changes in the volume of water consumed per head; levels of industrial activity; the impact of technological changes in industry; the impact of domestic metering, if adopted; leakage control.

Since the publication of the strategy, the Region has experienced extreme variations in rainfall, including a very wet winter in 1994/95 and the drought of 1995/1996 (see 6.6.1). As a result of the drought, it has been identified that an update to the 1994 Water Resources Strategy is required. Work commenced on this in August 1996 and the update was due for completion in March 1997. Following this, work will commence on producing a new regional water resources strategy for publication in 1999. One of the issues that will need to be addressed is an increase in emphasis on water conservation/management, including the possibility of artificial recharge of aquifers.

Current Status

Surface Water

The Agency manages a regional rainfall monitoring network which includes 46 rain gauges in the Swale, Ure and Ouse catchments. Of these rain gauges, 6 are incorporated into the Regional Telemetry System (RTS) and enable up-to-the-minute information to be gathered by computers and displayed at Agency offices (see Figure 4). As well as providing information which enables variations in long term average rainfall to be examined, the gauges are also used to predict likely flood situations before they occur.

In addition to the rainfall gauges, there is a network of 27 river gauging stations, which provide information on river flows and/or levels throughout the catchment. Of these, 23 are incorporated into the Regional Telemetry System (RTS) and are used to gather and collate up-to-the-minute information during periods of both high and low flow. Data from these stations are collected routinely as part of our hydrometric monitoring programme and the information collated is used to produce flow statistics both on a long term and annual timescale.

Where applicable a gauging station may be used to set a prescribed flow condition for surface water abstraction licences. Once the flow, as measured at the gauging station, is equal to or less than a specified figure, abstraction must either cease completely or be reduced to a lower volume. This condition applies to many existing abstraction licences and will be contained in all future licences that are granted by the Agency.

As a result of the drought of 1995/96, Yorkshire Water proposed a water transfer scheme. This is dealt with on the following page.

Groundwater

Throughout the Plan area, groundwater levels in the various aquifers are monitored on

a routine basis. This is achieved by measuring the groundwater level in boreholes that are part of the Agency's Groundwater Level Monitoring Network. The majority of these are monitored on a monthly basis. However, where groundwater levels respond more rapidly, for example in response to rainfall events, or where continuous monitoring is installed, the number of measurements taken each month increases.

After collection, the data is archived and can be used to monitor both short term and long term trends. In the short term, groundwater levels fluctuate with levels are usually at their highest in February/March following recharge of the aquifers over the winter months. However, as the year progresses, groundwater levels decline, reaching their minimum level towards the end of the autumn. The exact timing will vary and depends on a number of factors, including the type of aquifer and when the main period of winter rainfall starts and finishes.

In the long term, trends can be identified such as the effects of drought. For example, groundwater hydrographs for sites unaffected by groundwater abstraction in the Sherwood Sandstone and Magnesian Limestone, reflect the weather pattern of the last 25 years, with maximum levels in 1969 and 1980 and minimum levels in 1976 and 1992. These long term trends overly the usual annual variations of the hydrograph which are described above.

With the exception of drought periods, there are usually few problems with the availability of groundwater in those rocks which are classified as aquifers. Spring flows naturally decline during the summer and this effect is commonly seen in the springs of Wensleydale and Swaledale.

Locally, however, there are areas where groundwater resources have been fully committed through the Agency's groundwater abstraction licensing policy (see Issue 15). One example of this is in the Selby area where, historically, there has been a lot of abstraction for industrial purposes. In addition to this, there are also water quality problems associated with the high chloride levels, which have been described previously. A local groundwater management regime has, therefore, been proposed which will limit the volumes of water that can be abstracted from the Sherwood Sandstone aquifer in that area.

The Drought

The River Swale rises in the Pennines, is unregulated and follows a natural pattern of seasonal variations largely determined by weather conditions. A similar situation applies in the River Ure, which is largely unregulated and has a potable river abstraction at Kilgram Bridge to Thornton Steward reservoir or into the Harrogate main or Leighton reservoir group. The River Ouse receives water from these Pennine rivers and is a lowland river receiving a wide range of flows.

Abstractions for Leeds at Moor Monkton, and for York at Acomb Landing, make the river one of the key providers of water for public supply.

The Rivers Swale, Ure and Ouse all experienced low flows during the 1995/6 drought. Drought orders were in place on both the River Ure and River Ouse during 1995.

A number of mitigational conditions accompanied the drought orders, encompassing environmental monitoring requirements and some improvement measures.

In 1996 Yorkshire Water was granted abstraction licence variations on the rivers Ouse and Ure for a time limited period of three years. Completion of a new 23km pipeline allows water to be abstracted by Yorkshire Water from the River Ouse at the Moor Monkton intake to Elvington water treatment works. This involves pipeline crossings which have been completed on the River Ure at Jervaulx and Kilgram and on the River Ouse at Moor Monkton. These licence variations formed part of a medium term strategy formulated by Yorkshire Water in response to the drought events of 1995 and were determined using the new Surface Water Abstraction Licensing Policy (SWALP). Conditions on these licences require abstractions to cease when flows fall below a predetermined level and the installation of fish screens at river intakes to prevent fish from being drawn in. An environmental monitoring programme has been required to measure the impact of the increased abstractions; this is being carried out jointly by Yorkshire Water and the Agency. Existing information on impacts of flow on river ecology will assist this evaluation.

A three year joint programme of environmental monitoring by the Agency and Yorkshire Water Services has been agreed in relation to the time limited licences. The installation and effective operation and maintenance of fish screens at the River Ure intake at Kilgram Bridge and the River Ouse intake at Moor Monkton is also a condition of the licence.

The Swale, Ure and Ouse are all potentially affected by the proposed Tees transfer; the Tees-Wiske pipeline has been constructed as an emergency package should the need arise and the Tees transfer options are also being evaluated for the longer term. Environmental monitoring and evaluation programmes are in place and mitigational measures to improve the environment are being carried out (see Issue 14).

As a result of the drought of 1995/1996 Yorkshire Water announced the construction of a 13km pipeline from the River Tees to the River Wiske as an emergency measure. Water would be pumped from the River Tees into the River Wiske before flowing down the River Swale and River Ure to the River Ouse at Moor Monkton. Water would then be abstracted from the intake at Moor Monkton either to Elvington water treatment works or Eccup treatment works near Leeds. Construction of the pipeline was completed in 1996, with the exception of the outfall to the River Wiske at Birkby. This scheme has been viewed by the Agency as an emergency measure requiring a drought order application; Yorkshire Water subsequently declared that the pipeline would not be used in 1996.

The Tees transfer is also being considered as a long term option and the Agency has required Yorkshire Water to carry out a full programme of environmental assessment, encompassing environmental monitoring, in relation to both emergency use of the pipeline and long term consideration of Tees transfer options i.e. the existing Tees

(Blackwell) to Wiske pipeline, Tees (Blackwell) to River Swale, Tees (Blackwell) to Moor Monkton, Tees (Eggleson) to Moor Monkton. The Agency is carrying out its own independent audit and environmental monitoring programme and will be evaluating the environmental impacts of the proposals.

Water quality has remained high in these rivers with the exception of a deterioration in biological quality during Autumn 1995 in the River Ouse downstream of Naburn STW. The impact on fish populations continues to be assessed; fishing activities have been hampered by low flows and enhanced algal growth was apparent in some river stretches.

6.4.3 FLOOD DEFENCE

Background

The decision as to whether or not flood defences will be provided or improved involves consideration of many aspects including cost effectiveness, environmental acceptability and the wishes of the local population.

As an aid to decisions on priorities for works, the Agency has determined 'Standards of Service' for flood defences 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 2% means that, for any given year, the likelihood of a flood flow occurring which significantly affects key land use features, is 50 to 1 or 2%.

Details of the targets and land use bands are given in Table 8 below. Figure 21 shows the various land use bands for main rivers in this area.

Table 8: Flood Defence Standards of Service

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

Current Status

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.

SWALE, URE AND OUSE AREA FLOOD DEFENCE STANDARDS OF SERVICE



Figure 21

Within the Plan area the following are sites on main river where the indicative target standards of service for flood defence are not achieved:

Table 9: Sites in the Swale, Ure and Ouse area where the indicative target standards of service for flood defence are not achieved

	Urban		Rural
River Swale	Catterick		Morton-on-Swale Topcliffe Myton-on-Swale Kirby Wiske
River Ure	Boroughbridge	Langthorpe and Milby Island	Masham Danby Grange Nunwick Newby Hall Plaster Pitts
	Ripon	Fisher Green and Magdalen Road	
	Lower Dunsforth		
River Ouse	York	Queens Staith, Skeldergate South Esplanade, Kings Staith Fulford Pumping Station Houses A19 and Fordlands Road 32 Grange Garth Love Lane Cottage	Nun Monkton
	Acaster Malbis		
	Acaster Selby		
	Naburn		

6.5 BIODIVERSITY

Background

The UK Biodiversity Action Programme resulted from the Rio Earth Summit of 1992, the main aim being to maintain biological diversity in terms of species and wildlife habitats at a national level as the UK's contribution to global biodiversity conservation (see Issue 7).

The primary goals of the programme are:

- developing costed targets for key species and habitats;
- improving the accessibility and coordination of information on biodiversity;
- increasing public awareness and involvement in conserving biodiversity;
- ensuring that commitments in the plan are properly carried out and monitored.

Current Status

The Agency has taken special responsibility for 12 species (dependent upon an aquatic environment) and one aquatic habitat (chalk streams).

Of these species the following are known to be present in the Swale, Ure, Ouse area:

otter (*Lutra lutra*)
water vole (*Arvicola terrestris*)
native crayfish (*Austropotamobius pallipes*)
depressed river mussel (*Psuedoanadonta complanata*)

The River Ure is recognised as being nationally important for native crayfish and it may, at some stage, be designated under national or European conservation legislation.

A number of other aquatic species listed in the action plan, but not a special responsibility of the Agency, are also known to be associated with these rivers or with their wetlands, an example being the great crested newt (*Triturus cristatus*)

Certain of the above named species are totally protected under the Wildlife & Countryside Act 1981 and those currently unprotected are likely to receive such protection in the future.

APPENDIX A: AGENCY AIMS AND STRATEGIES

Aims

The main aims of the Agency 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 provide effective defence and 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 recycling and to improve standards of disposal.
- To manage water resources and achieve a 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.

Water Resources

It is the Agency's responsibility to assess, plan and conserve water resources. The Water Resources Act 1991 describes the duty of the Agency to ensure that measures are taken towards the conservation, redistribution, augmentation and proper use of water resources. The Act requires the Agency to make arrangements, with water and sewage undertakers and statutory water companies, to secure the proper management and operation of water resources and associated works. To effect these requirements the Agency controls abstractions by a licensing system and has the power, when necessary, to issue drought orders and designate water protection zones and nitrate sensitive areas.

Under the Water Resources Act 1991 all abstractions require a licence except for those of less than 20 cubic metres a day from surface water for domestic use by a single household and/or for agricultural use. From groundwater, abstractions of less than 20 cubic metres a day for domestic use by a single household are similarly exempt. There are also other exceptions for small abstractions from boreholes and springs. Charges for abstraction licences are based upon quantity, source, season and loss.

To secure proper management of water resources, the Agency operates a hydrometric network of rainfall and river flow gauging stations.

These provide not only data for water resources assessment but also for flood prediction, impact of effluent discharges, fisheries' management, conservation and recreational uses.

The Agency's strategic objectives regarding water resources are:

- to plan for the sustainable development of water resources, developing criteria to assess the reasonable needs of abstractors and of the environment;
- to collect, validate, store and provide hydrometric data and water environment data in order to assess water resources;
- to apply a nationally consistent approach to abstraction licensing, including licence determination, charging, policy and enforcement;
- to implement a consistent approach to the resolution of inherited problems caused by authorised over-abstraction;
- to work with other organisations to protect the quality of our water resources.

Water Quality

The aim of the Agency is to maintain and improve the quality of rivers, estuaries, coastal waters and groundwater through the control of water pollution. These aims are fulfilled via:

- water quality management;
- effluent quality regulation;
- pollution incident investigation;
- pollution prevention.

Water quality management is based principally on monitoring the environment to establish chemical, biological and microbiological quality. These data are used by the Agency to detect trends, plan improvements and execute its statutory duties regarding the setting of discharge parameters and compliance with EC directives.

The Agency controls inputs into the environment via the issue of consents. Discharges from industrial, agricultural, domestic and sewage related sources are regulated by specification of effluent quality limits and conditions which the discharger must achieve. Such discharges are monitored routinely and failure to satisfy consent conditions may lead to legal action being taken.

The Agency makes an immediate response to all reports of pollution. During a pollution incident investigative actions are taken to identify the source, stop the discharge, minimise its adverse effects and ensure that remedial work, where appropriate, is completed. Legal action is considered in cases of serious or repeated incidents.

Pollution prevention, via development control and advice on best practice to industry, farmers, water supply and sewage companies, is carried out in support of water quality management to prevent deterioration of the water environment.

The Agency's strategic objectives regarding water quality are:

- to maintain waters already of high quality;
- to improve waters of poorer quality;
- to ensure that all waters are of an appropriate quality for their agreed uses;
- to prosecute polluters and recover the costs of restoration from them;
- to devise charging regimes that allocate the costs of maintaining and improving water quality fairly and provide an incentive to reduce pollution.

Integrated Pollution Control

The Agency is responsible for regulating about 2000 of the most complex and potentially polluting types of process under the regime of Integrated Pollution Control. This is a preventative philosophy which requires operators to use the Best Available Techniques Not Entailing Excessive Cost to prevent, or minimise and render harmless, the release of harmful substances to the environment. In addition, the Best Practicable Environmental Option should be used where the releases from the process are to more than one of the environmental media, namely air, land and water, in order to minimise the overall effect on the environment.

Radioactive Substances

The Agency regulates the keeping, use and disposal of radioactive substances. Registrations are issued to keep and use radioactive materials and authorisations for accumulation and disposal of radioactive waste. The use of radioactive substances should be justified and regulated so that radiation doses to the environment are "As Low As Reasonably Achievable".

Waste Regulation

The Agency is responsible for regulating the waste disposal industry through the Environmental Protection Act 1990 and other legislation. This includes controlling the storage, transport, reclamation or final disposal of all controlled waste in order to prevent pollution of the environment.

Conservation

The purpose of the conservation activities of the Agency is to:

- conserve and enhance the wildlife, landscape and archaeological features associated with inland and coastal waters;
- promote the conservation of aquatic flora and fauna.

The Agency's statutory duties under the 1995 Environment Act are to further the conservation and enhancement of natural beauty in respect of proposals relating to Agency functions (other than pollution control functions, for which the Agency must have regard to conservation),

protect sites of conservation interest and take into account the effects that any proposed developments would have. This is achieved by regulating the work of others, through the land use planning consultation process, and issuing consents under the Land Drainage Act 1991 and Water Resources Act 1991 for works adjacent to rivers. The Agency also carries out a programme of conservation works using its own workforce, in addition to assessing the conservation implications of other functional activities.

The Agency's strategic objectives in relation to conservation are:

- to assess and monitor the conservation status of inland and coastal waters and associated lands;
- to ensure that the Agency's regulatory, operational and advisory activities take full account of the need to sustain and further conservation;
- to promote conservation to enhance the quality of the aquatic and related environments for the benefit of wildlife and people.

Recreation

The Agency has statutory duties to:

- promote the use of all inland and coastal waters and associated land for recreational purposes and take account of the needs of persons who are chronically sick or disabled.

Recreation includes the provision of opportunities and facilities for sports and other activities associated with water and the surrounding land, passive activities around water including public access and rights of way, and the maintenance of the aesthetic quality of the water environment.

These duties are identified in the Environment Act 1995 and in a code of practice which gives guidance on the kinds of provision required and the need to consider collaborative management with other bodies.

In addition to these recreational and amenity considerations the Agency, where it is the authority, has responsibilities relating to the maintenance and improvement of waterways for navigation. The Agency has no active navigation responsibility in the North East Region.

The Agency's strategic objectives regarding recreation are:

- to maintain, improve and promote recreational use of Agency sites;
- to take account of recreation in proposals relating to any Agency function;
- to promote the use of water and associated land for recreational purposes.

Fisheries

The general fisheries' duties of the Agency are set out in the Water Resources Act 1991. Under this Act the Agency is responsible for the regulation of fisheries through the application of orders, byelaws and licensing systems.

An essential feature of the 1991 Act is the statutory duty placed on the Agency to "maintain, improve and develop fisheries". The term "fisheries" encompasses both the recreational fishery and the fishery as an environmental resource. The Act effectively extends the Agency's duties to include responsibility for all inland waters which can support fish, but it excludes fish farms which are regulated by the Ministry of Agriculture, Fisheries and Food. Recreational fisheries include waters such as rivers, streams, canals, lakes, ponds and reservoirs.

In order to discharge its statutory duties the Agency undertakes a wide range of fish surveillance and monitoring activities. Fish populations are biological indicators of changes in river flow, quality and habitat. The regulation of fish introductions and fish capture is also important.

The costs of the fisheries' service are met, in part, by funds raised from rod licence sales.

The strategic objectives of the Agency's fisheries' function are:

- to protect and conserve salmon, trout, freshwater fish, eels and, where appropriate, coastal fisheries;
- to regulate fisheries through the enforcement of a consistent series of licences, orders, byelaws and consents;
- to monitor the fisheries' status of rivers and inland estuaries and, where appropriate, coastal waters;
- to formulate policies to maintain, improve and develop fisheries, and to restore and rehabilitate damaged fisheries;
- to provide an efficient and effective fisheries' service which is responsive to the needs of its customers and is based on a sound charging system.

Flood Defence

The Agency has powers to:

- protect people and property against flooding from rivers and the sea;
- provide a means for the drainage of land;
- provide adequate arrangements for flood forecasting and warning.

Certain water courses are designated as "main river". On main rivers the Agency has permissive powers to construct new defences, maintain existing defences, and control the actions of others so that the risk to property and people can be minimised.

The Agency is the primary body involved in flood defence matters but on "ordinary watercourses" district or borough councils are the first point of contact. For flooding from sewers responsibility rests with either the district or borough council or the water undertaker.

The standard of flood protection can be measured in terms of the frequency (e.g. 1 in 50 years), on average, up to which it will prove effective. The standards considered appropriate vary according to the land use to be protected and the economics of providing the service.

These activities are undertaken under the Water Resources Act 1991 and are directed by the Regional Flood Defence Committee. In addition to works on statutory 'main river' the Agency has powers to control weirs and culverts which can affect flow on ordinary watercourses.

The Agency's strategic objectives in relation to flood defence are:

- to develop and implement the flood defence strategy through a systematic approach for assessing capital and maintenance requirements and develop medium and long-term plans for those defences owned and maintained by the Agency;
- to encourage the development of information technology and the extension of facilities which will improve the procedures for warning of, and responding to, emergencies;
- to support R & D which will assist in identifying future flood defence needs;
- to review best practices for all operational methods and for the identification and justification of work, thus increasing efficiency and giving value for money;
- to heighten general awareness of the need to control development on flood plains and contribute to the development of Local Environment Agency Plans;
- to identify opportunities for the enhancement of environmental, conservation, recreational and amenity facilities when undertaking flood defence works;
- to undertake river maintenance operations in accordance with conservation guidelines for good practice.

Navigation

The Agency's future strategy for navigation is to take a lead in working with other navigation authorities in order to bring about a more consistent approach to the administration of navigation in inland waters than currently exists in England and Wales; to facilitate and regulate the use of those inland navigations for which the Agency is navigation authority or has powers; to include co-operative management of navigation with other core functions of the Agency.

Land Use Planning

The Agency is a statutory consultee of the land use planning system and seeks to ensure that local authorities take into account the needs of the water environment when preparing development plans and determining planning applications. Promotion of source control techniques by local authorities would assist in this process.

a close working relationship is required with county, district and borough councils on: mineral workings; waste disposal issues; infrastructure works; works within river corridors or floodplains; any activities likely to pollute surface waters or groundwaters, increase the demand for water resources or adversely affect the conservation and amenity value of the environment.

Guidance notes for local planning authorities on the methods of protecting the water environment through development plans have been produced (September 1993) and these are being promoted in conjunction with the initiative to prepare LEAPs.

Summary

Further information on the work of the Agency can be found in a series of Agency strategy documents covering water quality, water resources, flood defence, fisheries, conservation, navigation, recreation and research and development. These documents are available from the Agency corporate planning section at the Environment Agency head office in Bristol.

APPENDIX B: SUPPORTING DATA AND STANDARDS

The Water Quality Objective (WQO) scheme established quality targets based on the uses of the watercourse, to provide a commonly agreed planning framework for regulatory bodies and dischargers. The proposed WQO scheme is based upon the recognised uses to which a river stretch may be put. These uses could eventually include: River Ecosystem; Special Ecosystem; Abstraction for Potable Supply; Agricultural Abstraction; and Watersports. The standards defining the five River Ecosystem (RE) use classes, which address the chemical quality requirements of different types of aquatic ecosystems, were introduced by the Surface Waters (River Ecosystem) (Classification) Regulations 1994. For each stretch of river, an RE class WQO will be assigned including a date by which this level of water quality should be achieved.

Table 10 : Chemical standards for River Ecosystem Classification

Class	Dissolved Oxygen % saturation 10 percentile	BOD (ATU) mg/l 90 percentile	Total Ammonia mg N/l 90 percentile	Un-ionised Ammonia mg N/l 95 percentile	pH lower limit as 5 percentile; upper limit as 95 percentile	Hardness mg/l Ca CO ₃ 95 percentile	Dissolved Copper µg/l 95 percentile	Total Zinc µg/l 95 percentile
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
RE2	70	4.0	0.6	0.021	6.0 - 9.0	≤10 > 10 and < 50 > 50 and ≤100 > 100	5 22 40 112	30 200 300 500
RE3	60	6.0	1.3	0.021	6.0 - 9.0	≤10 > 10 and ≤50 > 50 and ≤100 > 100	5 22 40 112	300 700 1000 2000
RE4	50	8.0	2.5	-	6.0 - 9.0	≤10 > 10 and ≤50 > 50 and ≤100 > 100	5 22 40 112	300 700 1000 2000
RE5	20	15.0	9.0	-	-	-	-	-

Class RE 1: Water of very good quality (suitable for all fish species).

Class RE 2: Water of good quality (suitable for all fish species).

Class RE 3: Water of fair quality (suitable for high class coarse fish populations).

Class RE 4: Water of fair quality (suitable for coarse fish populations).

Class RE 5: Water of poor quality (likely to limit coarse fish populations).

Unclassified: Water of bad quality (fish are unlikely to be present), or insufficient data available by which to classify water quality.

Table 11: GQA Classification

The GQA scheme is used to make regular assessments of the quality of rivers to monitor trends over time and to compare rivers in different areas. Four components are being developed for the GQA assessment - general chemistry, nutrients, aesthetics and biology, each providing a discrete 'window' on the quality of the river stretches. The general chemistry component of the GQA is now in use. It is made up of six grades (A to F) defined by standards for Dissolved Oxygen, BOD and Total Ammonia. In the GQA chemical quality system A and B are classed as good quality, C and D are fair quality and E and F are poor quality. The remaining three GQA windows are still under development and will be applied when available.

Water quality	Grade	Dissolved oxygen (% saturation) 10 percentile	Biochemical oxygen demand (ATU) (mg/l) 90 percentile	Ammonia (mgN/l) 90 percentile
GOOD	A	80	2.5	0.25
GOOD	B	70	4	0.6
FAIR	C	60	6	1.3
FAIR	D	50	8	2.5
POOR	E	20	15	9.0
POOR	F	-	-	-

Appendix B3 : European Directives

There are several European Community Directives which apply to this LEAP area.

European Commission (EC) Directives

The introduction of the European Commission (EC) Directives from 1976 to protect the water environment has had a significant impact on water quality issues. The United Kingdom (UK) has adopted the appropriate directive requirements and is incorporating them into UK legislation to complement other Agency water quality improvement measures and monitoring schemes.

Annual reports are made by the Agency to the DoE for fresh and saline waters using results from a comprehensive sampling and analysis programme. Quality assessments are made using specific numerical standards which are currently the only statutory water quality requirements. Where waters do not comply with the standards the Agency is required to develop improvement plans to ensure the situation is remedied within an identified timescale.

The following Directives apply or will apply to the Swale, Ure and Ouse area.

The Surface Water Abstraction Directive (75/440/EEC)

The Directive ensures that water abstracted from rivers or reservoirs for drinking purposes achieves standards prior to treatment and distribution to public supply. Formal arrangements are in place between the water companies and the Agency to address non-compliance and other issues.

Exceedences have occurred for lead at Leighton Reservoir (at 0.0532 mg/l with an upper limit of 0.05 mg/l) and for copper at Beaverdyke (at 0.185mg/l with an upper level of 0.05 mg/l). Both exceedences are thought to be due to cross-contamination at the sampling point from metal pipework.

Drinking Water Directive

Owing to the importance of the Swale, Ure and Ouse catchment as a source of drinking water considerable emphasis is placed on the monitoring of pesticides concentrations within the catchment. Sporadic exceedences of the 0.1µg/l limit for certain herbicides has been reported by the water companies and confirmed by Agency routine monitoring. However, as this low level contamination is most likely to arise from diffuse inputs, direct control by the Agency is not possible.

Dangerous Substances Directive (76/464/EEC)

The Directive sets numerical standards for identified substances, which are particularly harmful to the water environment, and these must be achieved in all waters. New substances are introduced by the EC at intervals as new environmental initiatives are taken.

Compliance with Dangerous Substances Directive is assessed by monitoring for specific substances downstream of registered discharges, and at a reference site in the lower reaches of the catchment.

There were no monitored exceedences for List 1 dangerous substances within the Swale, Ure and Ouse area during 1996. There was an exceedence for vanadium, a List 2 substance, at Long Drax on the River Ouse.

The Freshwater Fisheries Directive (78/659/EEC)

The Freshwater Fisheries Directive requires that where rivers are designated and suitable for salmonid or cyprinid fish populations, the Directive's water quality standards must apply.

New designations may be made by notifying the DoE and permanent deterioration of designated waters is not permitted.

Some 114.7 km of the upper reaches of the River Swale and River Ure are designated as Salmonid fisheries together with 840.2 km of tributaries.

Cyprinid fisheries have been designated over 142.1 km of the main rivers Swale, Ure and Ouse together with 196 km of the tributaries.

The only significant failures to comply with the directive were for exceedences on dissolved oxygen and unionised ammonia in the River Wiske at Warlaby.

Improvements in the rivers Wiske and Ouse have been identified in Issue 9.

The Urban Waste Water Treatment Directive (91/271/EEC)

The Directive will apply to discharges of domestic sewage and similar industrial discharges with population equivalents in excess of 2000, made to fresh and saline waters and will be implemented in the period up to 2005. Standards will be set for discharge quality levels of treatment being specified according to the receiving water quality and characteristics.

North Sea Reduction Programme

Since 1987 the UK has adopted national and international initiatives to reduce pollution in 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.

Progress has been made with load reductions by the issue of consent conditions for appropriate discharges to achieve a 50-70% reduction over a period 1985-1995.

The Integrated Pollution Prevention and Control Directive

Integrated Pollution Control was introduced to the UK in 1991. Since then industrial processes with a significant potential to release substances to air, water and land have been authorised under this new integrated regime. The original regulations have been modified and refined to provide an effective and apt means of regulating a select group of complex industrial processes.

The EC introduced Directive 96/61/EC. "Concerning Integrated Pollution Prevention and Control" in September 1996. The requirements of this Directive will be implemented in the UK from October 1996. The likely effect of the introduction of this Directive will be to:

- alter the definition details of processes currently authorised under IPC in order to standardise across the whole of the EC.
- introduce new industries eg large landfill sites, intensive livestock production to the system of integrated pollution regulation;
- Introduce new or extend the scope of pollution control eg noise.

The Agency will implement any new, or changed, regulations relevant to its remit, will willingly provide advice and guidance to other organisations and will put its own expertise and experience in integrated environmental management at the disposal of the policy-makers.

APPENDIX C : ORGANISATIONS CONSULTED PRIOR TO LAUNCH OF CONSULTATION REPORT

Bedale & Upper Swale Internal Drainage Board
Bolton Estate
British Sugar Plc
British Waterways
City of York Council
Claro Internal Drainage Board
Cod Beck Internal Drainage Board
Country Landowners' Association
Countryside Commission
Countryside Committee for Ramblers
CPRE North Yorkshire Area
English Nature
English Heritage
Forest Enterprise
Forestry Authority
FWAG
Hambleton District Council
Harrogate Borough Council
Hawes & High Abbotside FA
Hazelwood Foods Ltd.
Kyle & Upper Ouse Internal Drainage Board
Lightwater Quarries Ltd
Lindfac Polymers
Linton Lock Commissioners
Lower Ouse Internal Drainage Board
Lower Swale Internal Drainage Board
Marston Moor Internal Drainage Board
Ministry of Agriculture, Fisheries and Food
National Farmers' Union
National Power
North Yorkshire County Council
Northallerton & District A C
OFWAT
Ouse & Derwent Internal Drainage Board
Richmondshire District Council
Ripon Motor Yacht Club
Salmon & Trout Association
Selby District Council
Selby Industrial Association
South Wharfe Internal Drainage Board
Swale Preservation Society
The Tidy Britain Group
Wiske Internal Drainage Board
York & District Amalgamation of Anglers
York Waterworks Plc.
Yorkshire Water Services
Yorkshire Wildlife Trust
Yorkshire Dales National Park

APPENDIX D : STATEMENT OF INFORMAL CONSULTATION

During September and November 1996 a wide range of local authorities and other organisations with an interest in the environment were contacted for formal consultation. Other organisations contacted included government departments and statutory bodies, conservation, amenity and other interest groups, industries and other businesses located in the area, landowners and angling organisations. A draft of Section 4, Issues and Proposals was sent to all the consultees. The purpose of this liaison was to:

- ensure all the major issues had been identified;
- ensure that the most important objectives and suitable proposals to meet those objectives were included;
- obtain comments on the appearance and content of the Section.

By 31 November 1996, 20 of the 48 consultees had responded. The breakdown of the responses is as follows:

Local Government	6	(30%)
Agricultural (MAFF/FWAG)	2	(10%)
Wildlife and Environmental Organisations	8	(40%)
Fishing Associations	1	(5%)
Business/Industry	1	(5%)
Water Industry	2	(10%)

Table 12: Number of comments received on each issue

Response	No.	Response	No.
General positive response	6	Habitat diversity	5
General negative response	0	Biodiversity	3
Format/layout of document	5	Erosion	2
Breadth of document (emphasis on water environment issues)	3	Quarrying/Mining - restoration of sites	5
Impact of droughts	2	Farming issues	2
Water Quality issues	5	Cultural heritage/archeology	1
Air Quality issues	0	Bracken eradication	1
Waste Issues	2	Siltation in rivers	1
Control of Pollution	6	Litter	1
Flood defence	4	Water leakage from pipelines	1
Partnership Issues	9	Abstraction from rivers	2
Tying in with local plans etc	2	Groundwater abstraction	3
Education	1	Impact of forestry	1
Recreation	4	Planning issues	1

APPENDIX E : GLOSSARY OF TERMS

Abstraction	Removal of water, from surface water or groundwater, usually by pumping.
Abstraction Licence	Licence issued by the Agency under s.38 of the Water Resources Act 1991 to permit water to be abstracted.
ALARA	As Low As Reasonably Achievable
Ammonia	A chemical found in water often as the result of discharge of sewage effluents. High levels of ammonia affect fisheries and abstractions for potable water supply.
AMP (Asset Management Plan)	For the purposes of this document Asset Management Plans can be considered as the means by which the water undertakers (e.g. Yorkshire Water Services Ltd) plan the work required, and the capital expenditure necessary, for improvements and maintenance of the water supply, sewage treatment works and sewerage systems. These are drawn up through consultations with the Agency and other bodies to cover a five year period. The Asset Management Plans have to be agreed by the Department of the Environment and OFWAT.
Aquifer	A layer of underground porous rock which contains water and allows water to flow through it.
AOD	Above Ordnance Datum. Equivalent to mean sea level.
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.
Asulam	Asulam is a herbicide used to control bracken.
Bacteria	Single-cell micro-organisms which multiply by fission. Aerobic bacteria need oxygen for growth. Anaerobic bacteria grow in an oxygen

	deficient environment. Other bacteria are typified according to the predominant reaction involved, e.g. acetogenic bacteria which break down organic matter to produce acetic acid, methanogenic bacteria form methane from the fatty acids produced by acetogenic and other bacteria.
Base Flow	Part of a stream's flow made up of groundwater; it sustains the stream during dry periods.
BATNEEC	Best Available Technique Not Entailing Excessive Costs
Bioaccumulation	Accumulation of (usually) toxic materials within the tissues of living organisms and not readily excreted by them; thus affording their concentration in food chains.
Biochemical Oxygen Demand (BOD)	A measure of the amount of oxygen in water during the breakdown of organic matter.
Biodegradation	The breakdown of material by the action of micro-organisms.
BTMA	Best Technical Means Available
Catchment	The total area of land which contributes surface water to a specified watercourse or water body.
Combined Sewer Overflow (CSO)	An overflow structure which permits a discharge from the sewerage system during wet weather conditions.
Containment Site	Landfill site where the rate of release of leachate into the environment is extremely low. Polluting components in wastes are retained within such landfills for sufficient time to allow biodegradation and attenuation processes to occur, thus preventing the escape of polluting leachates at unacceptable concentration.
Controlled Waste	Defined by the Water Resources Act 1991 Part III Section 104. It includes household, industrial and commercial waste.
Controlled Waters	Defined by the Water Resources Act 1991 Part

	III Section 104. They include groundwaters, inland waters and estuaries.
Cumecs	Cubic metres per second.
CWTN	Controlled Waste Transfer Notes.
Dangerous Substances	Substances defined by the European Commission as in need of special control because of their toxicity, bioaccumulation and persistence. The substances are classified as List I or List II according to the Dangerous Substances Directive.
Diffuse Pollution	Pollution from widespread activities with no one discrete source.
Discharge Consent	A statutory document issued by the Agency under Schedule 10 of the Water Resources Act 1991 to indicate any limits and conditions on the discharge of an effluent to a controlled water.
Disposal Authority	Disposal authorities were established by the Local Government Act 1972 (for England and Wales). They consist of the county councils, in shire counties, and the Borough/District Councils following abolition of the Metropolitan Counties and the Greater London Council, except where the Secretary of State establishes a Statutory Authority.
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 a water. It is used to classify waters.
Drift Deposits	Term used to include all unconsolidated superficial deposits (e.g. fluvial, glacial, alluvial, etc) overlying solid rock.
Effective Rainfall	The rain remaining as a runoff after all losses by evaporation, interception and infiltration have been allowed for.
Evapotranspiration	The loss of moisture from the earth's surface by means of direct evaporation together with transpiration from vegetation. (Transpiration - the process by which plants lose water vapour

	<p>through the stomata (pores) on their leaves, thereby extracting solid moisture and returning it to the atmosphere.) Potential evapotranspiration assumes an unrestricted supply of water from the earth's surface and refers to the theoretical maximum loss of moisture. Actual evapotranspiration is the observed or true loss of moisture.</p>
Fissure Flow	<p>Groundwaters flow through an aquifer by a combination of fissure flow through the cracks in the rocks and intergranular flow through the pore spaces of the rock matrix.</p>
Flood Plain	<p>This includes all land adjacent to a watercourse over which water flows or would flow, but for flood defences, in times of flood.</p>
Fly Tipping	<p>The unregulated and hence illegal dumping of waste.</p>
Groundwater	<p>Water which is contained in saturated underground strata.</p>
Headwater	<p>Streams close to their sources (in the context of the R&D project defined as being either first or second order, within 2.5 kilometres of the stream source or with a mean annual flow of no more than 0.31 cumecs).</p>
House Equivalent	<p>A measure used for assessing the value of property and land protected against flooding by flood defences.</p>
Hydrograph	<p>The plotted graph of groundwater levels, river levels, or river flow.</p>
Impounding Reservoir	<p>A man-made water retaining structure.</p>
Infiltration	<p>Process by which fluid enters into the pores of a solid.</p>
Karst	<p>Denoting the characteristic scenery of a limestone region, including underground streams and gorges.</p>
Landfill	<p>The deposit of waste onto and into land in such</p>

	<p>a way that pollution or harm to the environment is prevented and, through restoration, to provide land which may be used for another purpose.</p>
Landfill Gas	<p>A by-product from the digestion by anaerobic bacteria of putrescible matter present in waste deposited on landfill sites. The gas is predominantly methane (65%) together with carbon dioxide (35%) and trace concentrations of a range of vapours and gases.</p>
Leachate	<p>Liquid which seeps through a landfill and by so doing extracts substances from the deposited waste.</p>
Leaching	<p>Removal of soluble substances by action of percolating water.</p>
Macroinvertebrate	<p>Animal lacking a backbone which is retained on a 0.5mm sieve.</p>
Main River	<p>Some, but not all, watercourses are designated as 'Main River'. 'Main River' status of a watercourse must first be approved by MAFF. Statutory (legally binding) maps showing The exact length of 'Main River' are held by MAFF in London and the Agency in Regional Offices. 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'. The Agency has the legal power to spend public funds on drainage or flood protection works on watercourses designated as 'Main River' but not on other watercourses.</p>
Methane	<p>CH₄, a colourless, odourless, flammable gas, formed during the anaerobic decomposition of putrescible matter. It forms explosive mixture in the range 5-15% methane in air.</p>
Microbe, Micro-Organism	<p>Small organisms, usually single cells, which normally are only visible under a microscope. They include algae, bacteria and fungi. See also Bacteria.</p>
Mld	<p>Megalitres per day.</p>

$\mu\text{g/l}$	Microgrammes per litre.
$\mu\text{eq/l}$	Microequivalents per litre.
mg/l	Milligrams per litre.
Population Equivalent (p.e.)	The volume and strengths of an industrial waste water expressed in terms of an equivalent population, based upon a figure of 0.06 kilogramme BOD per capita per day.
Potable Water	Water of suitable quality for drinking.
Prescribed Flow Condition	A condition attached to an abstraction licence such that if the river flow is less than a present flow measurement, abstraction must cease until flows are restored.
Public Surface Water Sewer (SWS)	Sewers which transmit surface water run-off to a watercourse. The water should be uncontaminated and is the responsibility of the sewerage undertaker (in this case Yorkshire Water Services) to maintain and control.
Return Period	Refers to the return period of a flood. Flood events are described in terms of the frequency at which, on average, a certain severity of flood is exceeded. This frequency is usually expressed as a return period in years, e.g. 1 in 50 years.
Riparian Owner	A person/organisation with property rights on a river bank.
River Corridor	Land which has visual, physical or ecological links to a watercourse and which is dependent on the quality or level of the water within the channel.
River Quality Objective (RQO)	The level of water quality that a river should achieve in order to be suitable for its agreed uses.
RTS	Regional Telemetry System. The Regional Telemetry System allows up-to-the-minute information to be gathered by computers at an Agency office from outstations within the catchment. These outstations monitor river water

	level, flow and quality.
Sewage Sludge	Sludge resulting from the treatment of raw sewage. It typically contains 70-90% water, prior to dewatering.
Silage	A winter feed for cattle. Silage is produced in the summer by bacterial action on freshly cut grass and is stored in a clamp or silo. Silage production results in the formation of a highly polluting effluent.
Site of Special Scientific Interest (SSSI)	A site given a statutory designation, by English Nature or the Countryside Council for Wales, because it is particularly important on account of its conservation value.
Slurry	Animal waste in liquid form. Slurry is usually collected and stored in tanks or lagoons and is spread on farm land at a later date.
Springs	Natural emergence of groundwater at the surface.
Strata	Layers of rock, including unconsolidated materials such as sands and gravel.
Sustainable (development)	Capable of being maintained at a steady level without exhausting natural resources or causing ecological damage.
TCMD	Thousand cubic metres per day, equivalent to Megalitres per day (Mld).
Trade Effluent	Effluent derived from a commercial process or from commercial premises.
Washlands	The area of the flood plain 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.
Wastes, Controlled	Defined in the Environmental Protection Act 1990 Part 2 Section 75; includes household, commercial and industrial waste.
Waste Management Licence	Authorisation issued by the Agency allowing the

handling and disposal of controlled wastes.

Waste Regulation Authority

The competent authority responsible for licensing or supervising the storage, treatment or disposal of controlled wastes.

Waste, Special

Special waste is defined in the Environment Act 1995 Section 75. It includes more hazardous or toxic waste or waste which requires particular care in its handling or disposal.

Water Quality Objectives

Water Quality Objectives are objectives set by the Secretary of State for the Environment.

APPENDIX F : ABBREVIATIONS

ALARA	As Low As Reasonably Achievable
AMP	Asset Management Plan
AOD	Above Ordnance Datum
AONB	Area of Outstanding Natural Beauty
BATNEEC	Best Available Technique Not Entailing Excessive Costs
BOD	Biochemical Oxygen Demand
CSO	Combined Sewer Overflow
CWTN	Controlled Waste Transfer Notes
DOC	Duty of Care
DoE	Department of the Environment
EPA90	Environmental Protection Act (1990)
EPAQS	Expert Panel on Air Quality Standards
FWAG	Farming and Wildlife Advisory Group
HMIP	Her Majesty's Inspectorate of Pollution
IPC	Integrated Pollution Control
LEAP	Local Environment Agency Plan
LPA	Local Planning Authority
MAFF	Ministry of Agriculture, Fisheries and Food
NRA	National Rivers Authority
NWC	National Water Council
NWL	Northumbrian Water Limited
NYCC	North Yorkshire County Council
OFWAT	Office of Water Trading
pe	Population equivalents
PM10	Particulate matter below 10µm diameter
PPG	Planning and Policy Guidance
ppb	Parts per billion
R&D	Research and Development
RQO	River Quality Objective
RSPB	Royal Society for the Protection of Birds
RTS	Regional Telemetry System
SPA	Special Protection Areas
SSSI	Site of Special Scientific Importance
STW	Sewage Treatment Works
SWQOs	Statutory Water Quality Objectives
TCMD	Thousand cubic metres per day
UWWTD	Urban Waste Water Treatment Directive
WCA	Waste Collection Authority
WDA	Waste Disposal Authority
WRA	Waste Regulation Authority
WRA91	Water Resources Act (1991)
WTW	Water Treatment Works
YDNP	Yorkshire Dales National Park
YWS	Yorkshire Water Services

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

ENVIRONMENT AGENCY GENERAL ENQUIRY LINE

0645 333 111

The 24-hour emergency hotline number for reporting all environmental incidents relating to air, land and water.

ENVIRONMENT AGENCY EMERGENCY HOTLINE

0800 80 70 60



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