EA - NORTH EAST LEAPs - Box 2

# local environment agency plan

## NIDD AND WHARFE

### CONSULTATION REPORT

### JUNE 1997


ENVIRONMENT AGENCY

# YOUR VIEWS

The Nidd and Wharfe Local Environment Agency Plan Consultation Report is the Agency's initial analysis of the status of the environment in this area and the issues that we believe need to be addressed.

**We would like to hear your views:**

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

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

The Nidd and Wharfe Environment Planner
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 of the process, 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.

**The 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 Nidd and Wharfe 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 Nidd and Wharfe 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.

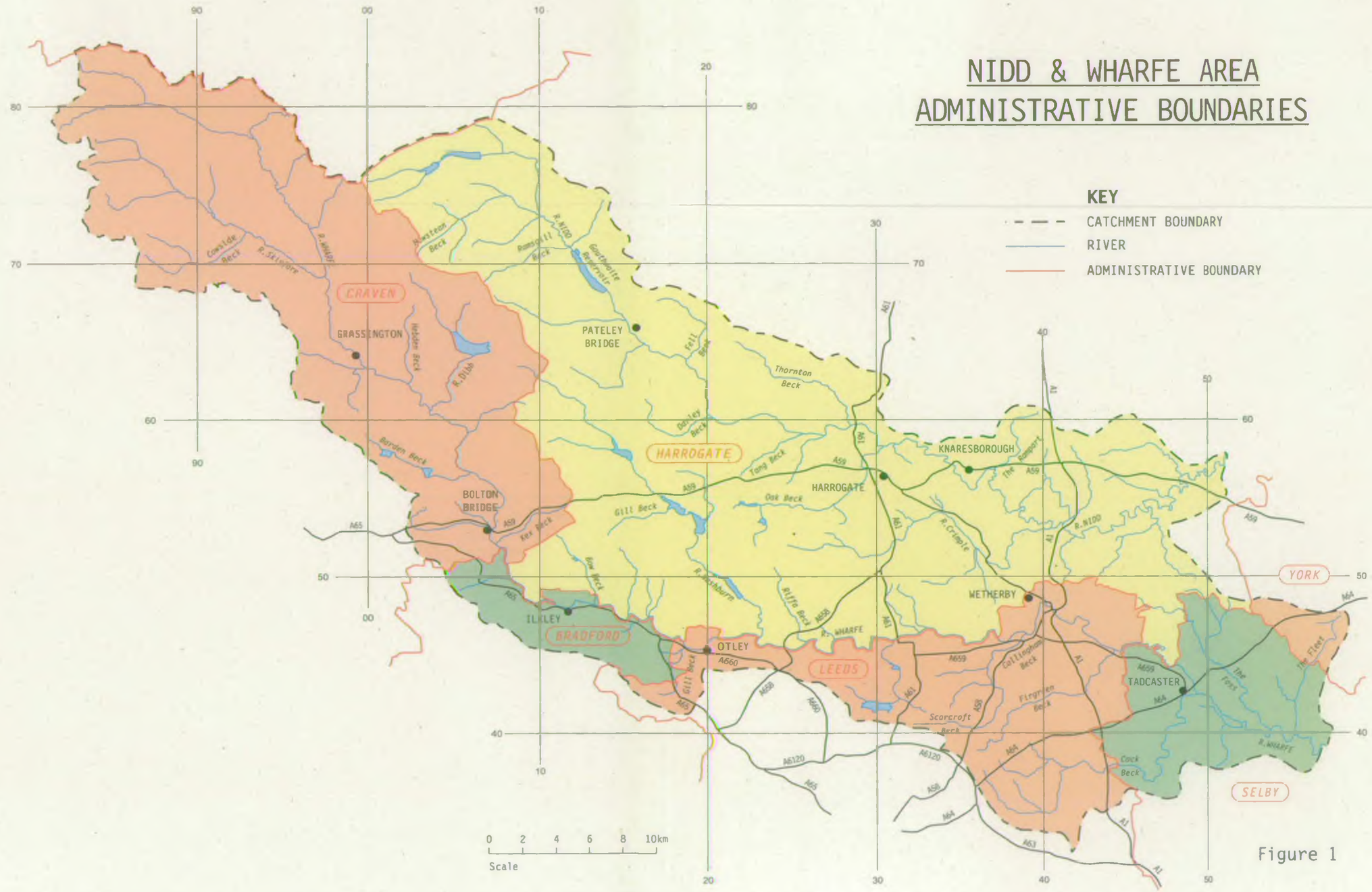
NIDD & WHARFE AREA
ADMINISTRATIVE BOUNDARIES
KEY
CATCHMENT BOUNDARY
RIVER
ADMINISTRATIVE BOUNDARY
CRAVEN
HARROGATE
BRADFORD
LEEDS
YORK
SELBY
GRASSINGTON
PATELEY BRIDGE
HARROGATE
KNARESBOROUGH
BOLTON BRIDGE
ILKLEY
OTLEY
WETHERBY
TADCASTER
R. NIDD
R. WHARFE
R. Crimple
R. Nidd
Thornton Beck
Gill Beck
Oak Beck
Tong Beck
Darley Beck
Fell Beck
Nidderdale Beck
Cowside Beck
R. Skirfare
Heslden Beck
R. Dibb
Barden Beck
Fox Beck
Bow Beck
R. Wharfe
Bilfe Beck
Collingham Beck
Fingrith Beck
Scorcroft Beck
Cock Beck
The Fleet
The Foss
0 2 4 6 8 10km
Scale

Figure 1

## 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 the environment in a co-ordinated way. The Nidd and Wharfe 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 other plans for the constituent areas in the North East Region, will represent a shared vision for the future, and will play a vital role in the protection of our environment, whilst recognising the ever competing pressures on the environment and the need to balance cost and benefit.

**Roger Hyde**

**Regional General Manager**

## DRAFT VISION FOR THE NIDD AND WHARFE AREA

The Nidd and Wharfe area is home to around 250,000 people and covers an area of over 1,500km$^2$. The majority of the area is rural. The population and industry are concentrated in towns, including Harrogate and Wetherby. The environment of this area is very important to those who live within it and visitors alike, providing a variety of uses, values and enjoyment that it brings to their local communities.

There is a wealth of opportunity for the Agency to work in partnership with the community for a variety of benefits to 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 from industry, agriculture, water supply, waste disposal, fisheries , conservation, recreation or protection from flooding.

Key Environment Agency aspirations for the Nidd and Wharfe area are to:

- work closely with others to maintain and protect the unique character of the Nidd and Wharfe area in the community;
- assess the impact on the rivers Nidd and Wharfe of abstraction;
- protect people and property from flooding where it is economically and environmentally feasible.
- encourage waste minimisation initiatives towards the achievement of national waste reduction targets;
- undertake farm and industrial campaigns to prevent or minimise the potential from pollution;
- actively participate in the local authority Agenda 21.

Finally the Agency wishes, through the production of this Local Environment Agency Plan and over the coming years, to establish strong links and partnerships with all those who influence the development of the Nidd and Wharfe area. It is by working together that we can achieve the sustainable improvements that will ensure environmental protection of and provide benefits for the Nidd and Wharfe area.

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**PART II**

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# PART I

Part I introduces the Environment Agency; examines the Nidd/Wharfe 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 in order to improve the Nidd and Wharfe 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 forward, merging the expertise of the former National Rivers Authority, Her Majesty's Inspectorate of Pollution, waste regulation authorities and certain sections of the Department of the Environment (DoE) to create a new organisation aiming to take an integrated approach to environmental protection and enhancement. This integrated approach, requires 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

*" A Local Environment Agency Plan (known as a "LEAP) is the Environment Agency's integrated local catchment management plan for identifying and assessing, prioritising and solving local environment issues directly related to the Agency's IPC and Water Management functions, taking into account costs and benefits and the views of the Agency's local customers."*

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 development 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 Nidd and Wharfe Local Environment Agency Plan will form one of a number of plans to be produced by the North East Region of the 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 Nidd and Wharfe 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 forward vision for the Nidd and Wharfe 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 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 entails a full consideration of environmental, social and economic issues during the decision-making process. This is an approach that has been backed by 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 2,1 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 assessments of 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 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 are to be based on the best possible scientific information;
- where there is uncertainty and where potentially serious risks exist, precautionary action will be necessary;
- ecological impacts must be considered, particularly where resources are non-renewable or effects may be irreversible;
- all environmental protection should be borne by the operator 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 NIDD AND WHARFE AREA

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

## 2.1 INTRODUCTION

The Nidd and Wharfe Plan covers an area of over 1,500km$^2$.

The River Nidd rises at Nidd Head near Great Whernside at the edge of the Yorkshire Dales National Park. It is joined by Darley Beck to the south of Summerbridge; Oak Beck just north of Harrogate; and the River Crimple at Walshford. The river then meanders eastwards to join the River Ouse at Nun Monkton, approximately 7 miles upstream of York. See Figure 1.

The River Wharfe rises in the Northern Pennines close to Ribblehead, and is formed at the confluence of Oughtershaw and Langstrothdale becks at Beckermonds. A little further downstream the river is joined by the River Skirfare, and then flows into a narrow valley past a few small villages and the town of Grassington. Having passed the A59 at Bolton Bridge, the river flows east through the towns of Ilkley, Otley, Wetherby and Tadcaster. The Wharfe, which at Tadcaster is a tidal river, then flows past Ulleskelf before entering the River Ouse to the east of Ryther.

**Geographic Area**

The water catchment forms the boundary of the Plan for all functions of the Agency other than waste regulations, whose boundary has been extended to include the local authority boundaries of Bradford and Leeds unitary authorities; additional parts of Craven and Selby district councils.

The main centres of population within the Plan area including: Harrogate, Knaresborough, Wetherby, Tadcaster, Grassington, Otley and Ilkley.

The area is served by several major road links including the A1, A59, A65, A64 and A61, which provide access between the major settlements in the area.

The area includes, in whole or in part, one county council, three unitary authorities, three district councils and the Yorkshire Dales National Park Authority.

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

The County of North Yorkshire

Three districts within the County of North Yorkshire are included, in whole or in part, in the Plan: Craven, Harrogate and Selby, having a total population of approximately 556,200. Much of this area, in particular Craven, is rural/agricultural and characterised by a dispersed settlement pattern of market towns, villages and hamlets. There are, however, some urban areas which are more densely populated such as Harrogate, Knaresborough and Tadcaster.

City of York and Unitary Authorities

Although a small area (approximately 270 km $^2$), the York Unitary Authority has a relatively large population of 174,400 in the York urban area. The Plan area also includes small parts of Leeds and Bradford unitary authorities, covering relatively large centres of population such as Otley and Ilkley.

Yorkshire Dales National Park

The Park covers 1,760 km$^2$ and has a population of around 19,000 permanent residents, although it receives millions of visitors per year. Despite fluctuations in the numbers of visitors to the Park, the overall trend is one of a steady increase.

As of 1st April 1997, under the terms of the Environment Act 1995, all the National Parks in England and Wales assumed 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

The majority of the Nidd and Wharfe Plan area is rural, and air quality is little affected by heavy industrial sources. Air quality is affected by agricultural use, domestic fuel burning and road traffic. The largest urban area within this plan is Harrogate with smaller urban areas at Knaresbrough, Wetherby, Tadcaster, Otley and Ilkley. The impact on air quality of the smaller scale industrial activities which are regulated by local authorities will not be neglected.

The activities regulated by the Agency within the Plan area, (under Part 1 of the Environmental Protection Act 1990), are diverse, including the production of lime and the manufacture of chemicals. Pollutant releases to air from these processes are regulated at the source of origin and minimised within the duties of the Act.

Air quality is the responsibility of the local authority and may be assessed by them using a combination of active and passive monitoring techniques. Only passive techniques are in use in this area. Harrogate District Council is taking part in the UK Nitrogen Dioxide Survey and is undertaking passive monitoring at twelve sites. Sites located inside the Nidd & Wharfe area include Harrogate and Knaresborough. Monitoring at these sites, to date, has not shown any breaches of air quality standards for nitrogen dioxide. The City of Bradford Metropolitan Council undertakes monitoring for nitrogen dioxide at Ilkley. The remaining local authorities (Craven, Selby, The City of York and Leeds City) do not undertake air quality monitoring inside the Plan area.

In addition to local air quality monitoring, the Department of the Environment operates a national network of monitoring stations, none of which are located in the Plan area. The nearest monitoring station is located in Leeds and results from this urban location will be not be representative of air quality for this predominately rural area.

The Environment Act 1995 required the Government to publish a National Air Quality Strategy, which is currently at the consultation stage. Local authorities will have to review the present and future air quality against standards and objectives contained within the strategy, and are required to achieve air quality standards by 2005. The Agency will work closely with the local authorities to help achieve National Air Quality Targets (see 3.3).

Under Part I of the Environmental Protection Act 1990 local authority environmental health departments regulate air pollution from thousands of industrial premises. Industrial activities undertaken at these premises have a lower potential to pollute than those activities regulated by the Agency. The activities 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 to Air Quality Standards 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 (ie those regulated by the Agency under Integrated Pollution Control) in the Nidd and Wharfe area which will input into Local Air Quality Plans. See Sections 6.2.1, 5.1.3 & Issues 17 , 18.

## 2.3 LAND

### 2.3.1 GEOLOGY

The characteristic limestone scenery of the Dales in Upper Wharfedale and Littondale is produced by the Carboniferous Limestone, which comprises a sequence of limestones and shales (see Figure 2). Down river the rocks become progressively more recent in age. The River Nidd rises on Carboniferous Limestone appearing in only a few isolated places such as the well known feature Howstean Gorge. The River Nidd goes underground for a length above Lofthouse. The Carboniferous Millstone Grit, sandstones and shales form an area of grit moorland in the catchment areas of the rivers Washburn and Dibb, Barden Beck and other tributaries of the River Wharfe.


## KEY

CATCHMENT BOUNDARY

RIVER

TRIASSIC — SHERWOOD MUDSTONE GROUP

PERMIAN — PERMIAN MARL; MAGNESIAN LIMESTONE

CARBONIFEROUS — COAL MEASURES; MILLSTONE GRIT SERIES; CARBONIFEROUS LIMESTONE SERIES

# NIDD & WHARFE AREA GEOLOGY

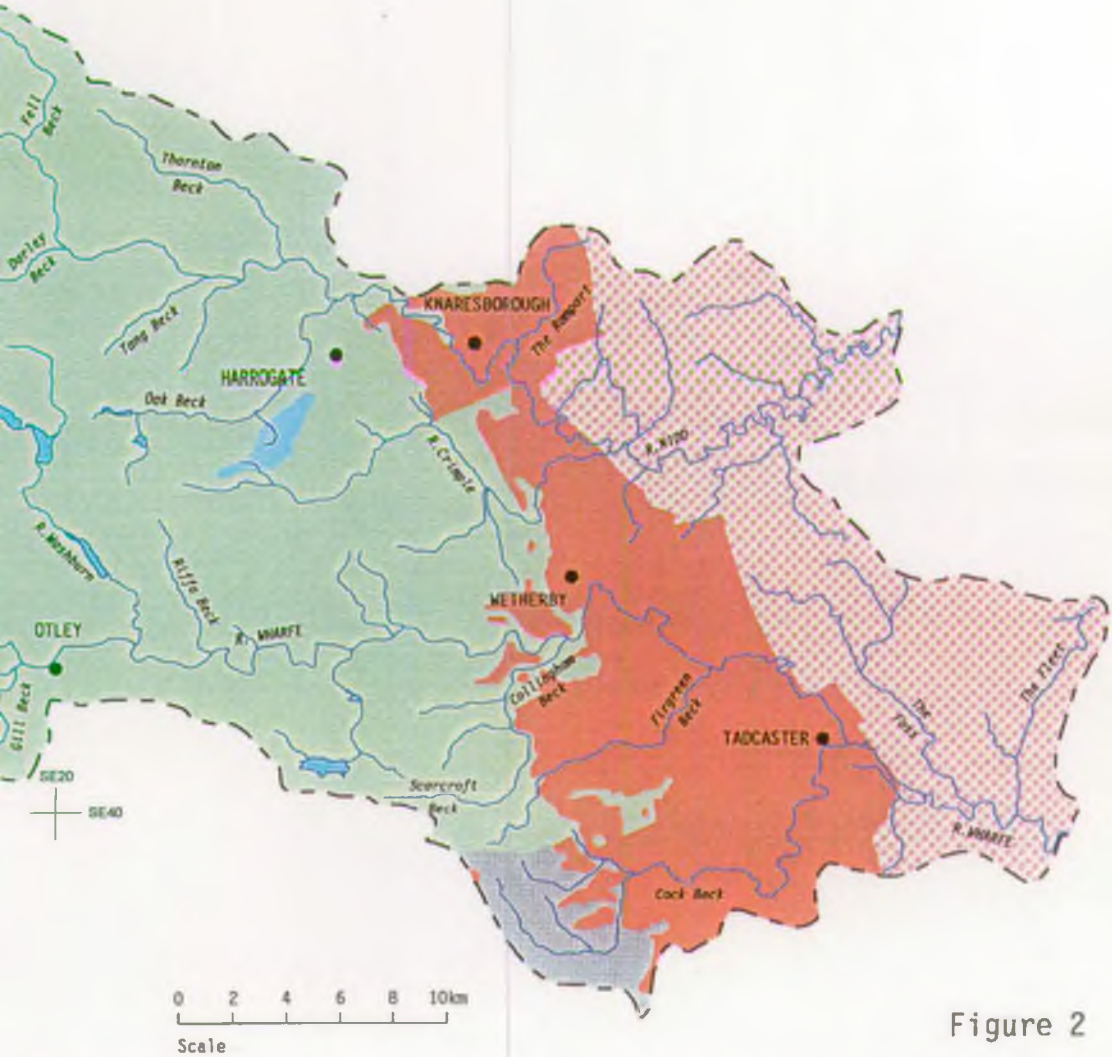



Figure 2

# NIDD & WHARFE AREA TOPOGRAPHY

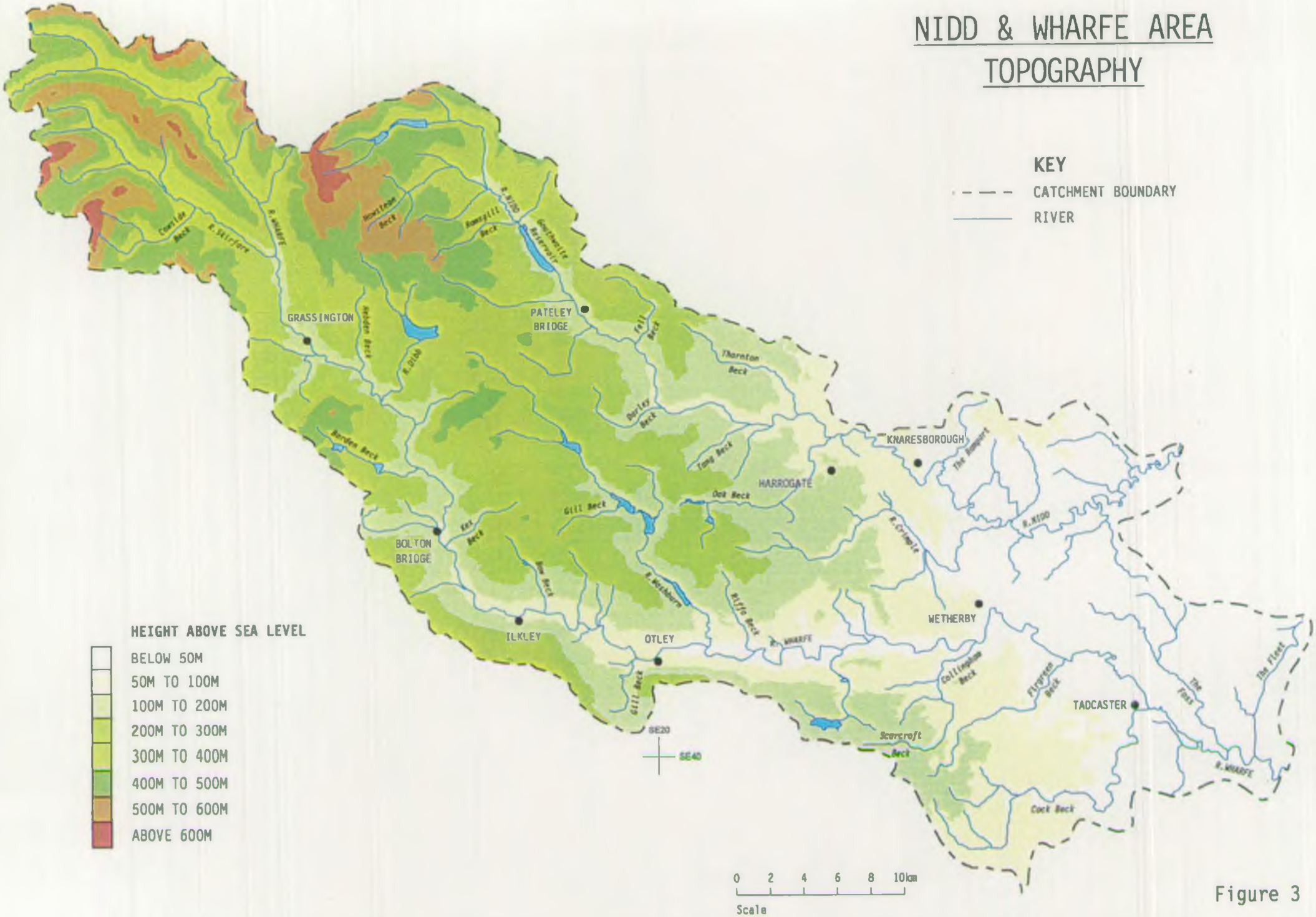



Figure 3

The Permo-Triassic rocks of the Vale of York cut across the Carboniferous rocks. The Magnesian Limestones (limestones and thick clays) form 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 outcrop as limestone cliffs alongside the River Nidd in Knaresborough. As the Magnesian Limestones dip gently eastward they are overlain by the Sherwood Sandstone Group, a thick soft sandstone that forms the centre of the Vale of York. See 5.1.7.

### 2.3.2 TOPOGRAPHY

The River Nidd rises to the east of Great Whernside, the highest point in the catchment at 704m AOD. The river flows southeast through a steep sided valley, before turning east below Birstwith. Downstream, the valley broadens out and the surrounding hills gradually decrease in height. Below Knaresborough, the river takes a meandering course across the Vale of York, joining the River Ouse at Nun Monkton.

The River Wharfe rises on the eastern flank of Pen-y-Ghent (694m AOD). Upstream of Grassington, the valley of the southeasterly flowing River Wharfe is characterised by the limestone scenery of pasture and rocky outcrops. The valley is generally steep sided with a flat valley floor. Downstream of Addingham the river turns east; here the valley is wider and the landscape more undulating. The River Wharfe joins the tidal River Ouse one kilometre upstream of Cawood. See 5.1.7.

### 2.3.3 SOILS AND LAND USE

Soils are usually associated with the underlying, or upstream, geology. Similarly, land use is often associated with the soil, which is the case for the Nidd and Wharfe area. The land use is predominantly rural, accounting for over 90% of the total area.

On the tops of the moors, where millstone grit is the underlying geology, the peaty soils are acidic, fibrous and often waterlogged. In recent decades, extensive moorland drainage has taken place, aimed at improving the use of the moorland for grouse and sheep rearing. Forestry is the other principle land use on this type of soil in the moorland areas.

In upper Wharfedale and Littondale, shallow peaty topsoil overlies the carboniferous limestone. The limestone is exposed at outcrops and crags on the valley sides and as karst pavement on the hill tops. The land use is good quality grazing and recreation. Alluvial and non alluvial soils on the floors of the valleys provide additional good quality grazing and permanent grassland.

In the middle reaches of the catchment, seasonally waterlogged soils overlying the millstone grit are extensively used for stock rearing with some cropping of cereals. Alluvial deposits in the valley bottoms are used for cropping where the risk of flooding is low.

Overlying the Magnesian Limestone, downstream of Knaresborough and Wetherby, are non alluvial brown earths of the Aberford soil series. Arable crops of cereals, beet and potatoes replace stock rearing as the main agricultural land use. See 5.1.7.

### 2.3.4 WASTE

The waste disposal needs of the Plan area are mainly served by facilities which are outside the area. Household waste, which makes up the bulk of controlled waste arising in the area, is disposed of outside the catchment. The only landfill sites now operating in the area are solely for the disposal of wastes from construction and demolition activities.

As a largely rural area, the main sources of controlled waste are householders. Only small amounts of industrial and commercial wastes are produced and the pattern of production follows the population distribution. The production of household waste per capita corresponds to the national average but the levels of industrial waste production are significantly lower. Much of the industrial waste produced is similar in nature to household waste or is made up of materials from the construction industry and is therefore relatively low in hazard. Only small amounts of difficult or special waste are produced in the Plan area and these are disposed of at designated sites outside the area. There is one licensed facility for the transfer and collection of special wastes, prior to transfer elsewhere. In addition small amounts of industrial effluent are disposed of directly to agricultural land.

The Plan area has three household waste reception facilities, with subsequent disposal of the waste to landfill. These are supplemented by a number of smaller recycling facilities which are provided by the three local authorities in the more rural parts of the Plan area. See Issues 8 - 11.

## 2.4 WATER

### 2.4.1 CLIMATE AND RAINFALL

Due to the size of the catchment and its topography, rainfall and climatic conditions vary dramatically across the Nidd and Wharfe area. Annual rainfall totals range from 600mm at Cawood to 2000mm on the tops of the Pennines. Annual evaporation rates vary less dramatically, from 500mm at the top of the catchment to 560mm in the Vale of York.

Because of the variations in rainfall and evaporation rates, there is effective rainfall in the Pennines all year while the Vale of York has no effective rainfall during an average summer. Snowfall is a significant source of water in the upland parts of the catchment during winter months. Melting snow has been a major factor in several large flood events, including the flood of January 1995.

### 2.4.2 HYDROLOGY

The steep and narrow valleys cause the rivers to rise quickly in response to rainfall. The construction of reservoirs, particularly in upper Nidderdale, has had an effect in reducing flood flows, though changes in upland land use and drainage may increase runoff rates. Water from reservoirs and river abstractions in both the River Nidd and River Wharfe catchments is used to supply the West Yorkshire conurbations. This alters the natural flow regimes of the two rivers.

The main artificial influence on the River Nidd is Gouthwaite Reservoir, upstream of Pateley Bridge. Water is stored in Gouthwaite during the winter and spring, then released down the river during times of low flow to compensate for the loss of flow caused by Scar House and Angram Reservoirs situated at the head of the valley. Water collected in these two reservoirs is used mainly to supply Bradford. The largest artificial inputs of water to the river are from the two Harrogate Waste Water Treatment Works, which discharge into the River Nidd and the River Crimple. During times of flood, river levels in the lower reaches of the Nidd are increased by water 'backing up' from the River Ouse, downstream.

Within the Wharfe catchment there are seven large reservoirs on three of the largest tributaries (Barden Beck, River Dibb and River Washburn). The small percentage of reservoired catchment (13.9%) does not have a significant impact on flood flows in the River Wharfe. Low flows are significantly increased between Grimwith Reservoir (River Dibb) and Addingham (River Wharfe), due to augmentation releases from Grimwith to support the Lobwood and The Hollins public water supply abstractions. Elsewhere in the catchment, the reservoirs reduce flows on the tributaries, and abstractions on the main river can reduce flows below their 'natural' level. See 6.4.

### 2.4.3 HYDROGEOLOGY

The Carboniferous limestones and sandstones of the Pennines form minor aquifers. Springs and sinks are notable features where the rocks outcrop. Yields from these aquifers are generally low. The eastern end of the Greenhow mining area drains into the River Nidd by the Eagle Level adit. Water from the adit is used for public supply to Pateley Bridge.

Major aquifers exist in the Magnesian Limestone and Sherwood Sandstone. Water quality is generally good, though is sometimes 'hard' (i.e. holds a high content of dissolved rock). Water in the Magnesian Limestones may become very hard where the aquifer is confined by marls (clays), due to the presence of gypsum. There are high levels of iron, manganese, and nitrate in certain areas.

Groundwater levels recorded at sites in those areas of Magnesian Limestone and Sherwood Sandstone unaffected by groundwater abstraction, reflect the weather pattern of recent years. In the last thirty years, maximum groundwater levels were recorded in 1969 and 1980, and minimum levels in 1976 and 1992. See 5.3, 6.4.1 & Issues 5 & 6.

### 2.4.4 WATER QUALITY

Surface water quality is generally high in the Nidd and Wharfe area, with water being extensively used for potable supply, fish farming, high class coarse fisheries and game fishing.

Nevertheless, localised water quality problems exist. A number of sewage treatment works, and storm overflows on the sewerage system (which operate during times of heavy rainfall), affect stretches of watercourse in the river catchments, the problems being more acute around the main centres of population. Discharges giving rise to the greatest water quality problems have been highlighted and prioritised by the Agency for improvement works by Yorkshire Water Services Plc under its Asset Management Plan Part 2 (AMP 2) spending programme.

Whilst industrial activity is not extensive in the Plan area, quarrying, paper/board manufacturing, brewing and fish farming are activities of particular importance and necessitate regular monitoring by the Agency to ensure that the impact of discharges on watercourses from these activities is controlled and minimised.

Water quality problems and pollution incidents associated with agricultural activity are also a regular cause for concern, especially in rural locations. The Agency is responsible for enforcing the Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) Regulations 1991, which set out the minimum legal standards governing size, construction and siting of silage, slurry and fuel oil facilities.

The aim of these regulations is to reduce the risk of pollution by improving storage facilities on farms, so that materials that may otherwise have an adverse affect on the environment are contained. See 6.4.2 & Issues 3,4, & 6.

## 2.5 WILDLIFE AND HERITAGE

### 2.5.1 FISHERIES

Fish populations of the rivers Nidd and Wharfe are generally of a high quality and are a reflection of good water quality and diverse physical habitat. Species distribution follows the classic zonation associated with changes in river width and gradient, with trout in the upper reaches; grayling appearing further down; then riverine cyprinids, such as barbel; and finally fish characteristic of slow flows, such as bream and roach. Bullhead, minnow and stone loach are found in the upper reaches of both rivers and most tributaries.

Both rivers support high quality trout and grayling fisheries. Trout occur from the upper reaches downstream to Knaresborough on the River Nidd and Wetherby, on the River Wharfe. Grayling are present further downsteam and are found down to Tockwith on the Nidd and Tadcaster on the Wharfe. Some tributaries are good trout nursery streams, but others are poor. However, the headwaters of the River Nidd, upstream of Angram Reservoir, and several upper tributaries are virtually fishless, possibly due to acidity. Trout stocks are also poor in the River Nidd below Scar House Reservoir; some parts of the River Washburn; the River Skirfare; and some upper Wharfe tributaries, due to very low flows in dry periods. Some trout recruitment may occur in the River Nidd itself.

In the upper reaches of the rivers Nidd and Wharfe, and most of the tributaries, brown trout stocks are maintained by natural recruitment, but in the main rivers, downstream of Pateley Bridge and Kettlewell, the natural recruits are supplemented by stocking by angling interests, usually with fish of takeable size. Downstream of Knaresborough and Ilkley, little successful breeding occurs in the main river and most natural recruits are derived from the tributaries.

Gouthwaite Reservoir is noted for its grayling populations which migrate into the upper reaches of the River Nidd to spawn in spring. Both main rivers have good grayling populations, although there have been recent reports of declines of this species in some stretches of the River Wharfe. Generally, few grayling are found in the tributaries.

Coarse fish dominate the lower reaches of both rivers. In the River Nidd, dace, chub, gudgeon and the occasional roach occur downstream of Birstwith Weir, which acts as a significant barrier to upstream fish movement. Downstream of Knaresborough, bream, barbel, perch, pike and ruffe are also common. In the River Wharfe larger coarse fish are most abundant downstream of Otley, although significant numbers occur up to Ilkley and in some of the lower tributaries. Roach, dace, chub, gudgeon, barbel are common and some bream are also present.

In recent years, numbers of dace have decreased, whilst those of perch have increased. Following a decline in the late 1960s and early 1970s, the numbers of roach have recovered. Recently, chub numbers have increased in the River Wharfe and pike have extended their distribution upstream of Harewood Bridge. Large chub of the 1975 and 1976 year classes have dwindled in number, but large chub and barbel from year classes of the early 1980s are important in the fisheries, and the 1989 year classes of coarse fish are now prominent in stocks. Early indications are that the 1995 year classes should be conspicuous in stocks over the next few years.

Eels were formerly abundant in the lower River Wharfe, but recent reports suggest a decline, and due to difficulties in ascending obstructions, few are present in the upper river. The greatest eel stocks are found in the tidal River Wharfe where they are exploited both by angling and licensed fyke netting. Flounders are common in the tidal reaches of the River Wharfe.

Many smaller still waters in the area contain important fish populations. Many of these lakes and ponds contain coarse fish, although some are managed as put-and-take trout fisheries. Rainbow trout are regularly introduced into some of the reservoirs in the catchments which are operated as put-and-take fisheries. Historically many of these still waters were created for purposes other than fisheries but, in recent years, increasing numbers of ponds have been designed and constructed specifically for angling. See 5.5.2 & Issues 22.

### 2.5.2 CONSERVATION

There are many sites within the Nidd and Wharfe area designated as important for nature conservation. The upper reaches of the Wharfe lie within the Yorkshire Dales National Park and a large proportion of the upper Nidd and the Washburn river valleys fall within the Nidderdale Area of Outstanding Natural Beauty. Consequently these areas are relatively well protected from future development. There are over 40 Sites of Special Scientific Interest (SSSIs) and as the number of designations suggest, the Plan area is of great conservation interest.

The catchment of the River Nidd from its source just outside the Yorkshire Dales National Park down to Birstwith lies within the Nidderdale Area of Outstanding Natural Beauty (AONB), an area noted for its landscape features. This upland section of the river contains five SSSIs, all of which are located close to or adjacent to the river and are designated for a variety of reasons.

Moorland, reservoirs and woodland contribute to the conservation interest of the upper and middle River Nidd catchment downstream to Harrogate, especially the diverse range of migratory bird species. The trees lining the river bank are predominantly alder. Where the upland grassland is influenced by the underlying carboniferous rocks, limestone rich grassland has developed which is often of high conservation value.

As well as these designated sites of conservation interest, the River Nidd catchment has a large number of locally identified sites of high conservation value, such as the Nidd Gorge, near Knaresborough, which supports common sandpipers, dippers, kingfishers and deer, and is also of botanical interest.

The River Wharfe catchment contains 40 SSSIs, a National Nature Reserve and a Local Nature Reserve. In addition to these designated sites, there are a number of sites which have been identified by local authorities and other organizations as being of high conservation value. The river itself is a SSSI for 4.4 miles from Buckden to Kettlewell. Cowside Beck, in upper Wharfedale, lies within the Malham Arncliffe SSSI, which is covered by the 'Memorandum of Understanding on River SSSI". See 3.3.

The upper catchment is a Carboniferous Limestone dale including various cave systems and supporting a diverse range of flora and fauna. The moorlands are noted for their

upland wader populations, particularly of dunlin and golden plover. In the catchment outside of the Yorkshire Dales National Park, the areas of high conservation value are more scattered.

The middle parts of the River Wharfe area contain several sites designated as SSSIs for their geological, botanical and avian interest, including Strid Wood near Bolton Abbey and Eccup Reservoir. In the lower River Wharfe catchment, the valley is wide and flat and contains few, mostly small, designated sites of conservation importance.

There is evidence that both river corridors support scheduled mammals such as otter. Both rivers also support populations of native white-clawed crayfish *(Austropotamobius pallipes)*. However, the presence of American signal crayfish *(Pacifastacus leniusculus)* in the River Wharfe and tributaries from Kilnsey Crag to Boston Spa is of some concern as they may affect the populations of native crayfish in the river. See 5.6.1, 6.5.1 & Issues 12, 13.

### 2.5.3 HERITAGE

The landscape of Britain contains a rich heritage of historic and archaeological features. Archaeological evidence of past human existence is widespread in the rural landscape and rivers have been the focus for settlement life from prehistoric times to the present day. Watercourses have long been important for the supply of water for domestic use as well as the movement of people and the generation of power. Many settlements owe their existence to the presence of watercourses and other favourable physical features.

The Nidd and Wharfe area has a rich and varied history and contains numerous Scheduled Ancient Monuments, with hundreds of sites currently unscheduled. The number of Scheduled Ancient Monuments is likely to increase as the local authorities continue to review sites.

Archaeological finds dating back to the Mesolithic period have been found in the Dales, and farming tools from the Neolithic and Bronze Ages have been found extensively in Nidderdale. Upper Wharfedale is rich in archaeological remains, such as burial mounds and henges, and there is much evidence of Iron Age settlements, such as Close Farm Settlement on the moors north of Grassington.

There are Roman towns and forts throughout the two river catchments. Medieval castles and abbeys include Knaresborough Castle and Bolton Abbey. There are also a number of notable battlefield sites, including Towton and Marston Moor, and several large estates and parklands of special historic interest throughout the area. See 5.6.3.

## 2.6 KEY DETAILS

| | | |
|---|---|---|
| **Area:** | 1,555 km² | |
| **Estimated Area Population** | 250,000 | |
| **Administrative Details** | | |
| **Unitary Authorities:** | City of York<br>Bradford | Leeds |
| **County Council:** | North Yorkshire County Council | |
| **District Councils:** | Harrogate<br>Selby | Craven |
| **National Parks:** | Yorkshire Dales National Park | |
| **Water Companies:** | Yorkshire Water Services Plc | |
| **Internal Drainage Boards:** | Appleton Roebuck & Copmanthorpe<br>Marston Moor<br>North Wharfe<br>South Wharfe<br>Acaster<br>Claro | |

**AREA INFORMATION**

| INDUSTRY | |
|---|---|
| Number of IPC Authorisations | 5 |
| Number of IPC Sites | 5 |
| Number of Radioactive Substances Authorisations | 3 |

| WATER QUANTITY | |
|---|---|
| Number of Licensed Groundwater Abstractions | 270 |
| Number of Spring &Surface Water Abstractions | 341 |

| WASTE ARISINGS | |
|---|---|
| Number of Landfill Sites | 15 |
| Number of Licensed Waste Transfer Stations | 6 |

| ECOLOGY AND FISHERIES | |
|---|---|
| Section 30 Consents to Introduce Fish (1996) | 97 |
| Number of SSSIs | 49 |

| FLOOD DEFENCE | |
|---|---|
| Length of Defences on Main River | 300km |
| Number of People and Property Protected | 2438 house equivalents |

| WATER QUALITY | |
|---|---|
| Number of Consented Sewage Discharges>250pe | 29 public / 1 private |
| Number of Consented Industrial Discharges | 10 (plus 11 fish farms) |

# 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 current legislation. This section highlights the potential opportunity of the various Agency partnerships, to address the longer term management of the Nidd and Wharfe area.

The Agency must work in partnership with others to ensure that many of the proposals 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 this happens. The 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 mentioned in this Consultation Report, however, partnership proposals are welcomed from other organisations.

| | |
|---|---|
| Angling Clubs | Local Authorities |
| Countryside Commission | MAFF |
| English Nature | NWC |
| Farming and Rural Conseravtion Group | North Yorkshire County Council |
| Farming and Wildlife Trust | OFWAT |
| Farming and Wildlife Advisory Group | RJB Mining |
| Forest Enterprise Agency | The Health and Safety Executive |
| Forestry Authority | Yorkshire Dales National Park Authority |
| Gouthwaite Board of Management | Yorkshire Water Services Plc |
| Hawk and Owl Trust | YorkshireWildlife Trust |

A full list of organisations involved at the pre-consultation stage of this document can be found in Appendix F.

## 3.2 EDUCATION

The Agency in the North East will seek to educate and influence individuals, groups and industries to promote best environmental practice. The Agency will work in partnership with statutory and voluntary groups in order to carry out improvement projects and develop a wider public awareness of environmental issues.

The Agency's overall remit of protecting and enhancing the whole environment contributes to the worldwide goal of sustainable development. Education is considered to be a key element of sustainable development.

The Agency will work through schools and other educational establishments to develop in our children an ethos of caring for the whole environment (see Issue 2).

## 3.3 KEY PARTNERSHIPS

### Introduction

This section primarily covers the partnership between local authorities and the Agency in relation to land use planning, air quality, water resources, 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 one of the most important influences 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 and Yorkshire Dales National Park Authority, which now has its own 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 (LPAs) and the Agency, and the relationship between land use and the environment.

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

### Development Plans

Regional Planning Guidance for Yorkshire & Humberside (RPG12) was issued by the Department of the Environment (DoE) in March 1996 after consultation with, amongst others, the LPAs 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.

All local authorities are required to produce development plans. These 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. This allows the Agency's views to be considered by the councils when formulating local development plan policies and allocating land for development.

The former 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" (1994). 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 is presently being updated by the Agency.

Through the consultation process the Agency encourages LPAs to adopt policies which protect the environment from any potentially harmful effects of development. See Table 1 & 5.1.1.

**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 LPA prior to individual planning applications being determined.

The North Yorkshire County Council Structure Plan (1980) contains policies on the need to control pollution, and the County Analyst provides an analytical service for district council Environmental Health Officers (EHOs).

**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 of 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. In line with government guidelines, LAs are required to work 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.

**Local Community**

The local 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 environmental protection and enhancement, litter and pollution. The role of the community within Local Agenda 21 work is not to be underestimated and will be encouraged by the Agency when, and wherever possible. See Issues 1 & 2.

**Air Quality**

Local authorities' environmental health departments regulate air pollution from thousands of industrial premises under Part I of the Environmental Protection Act 1990. Industrial activities undertaken at these premises have a lower potential to pollute than those activities regulated by the Agency. The activities are known as Part B processes and only the releases to the air are controlled. Local authorities will be required to review present and future air quality against air quality standards and objectives prescribed in regulations set out 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 Nidd and Wharfe area which will input into Local Air Quality Plans.

**Waste Management**

Local authorities are 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 local waste plan, county structure plan and local development plan. They are instrumental in determining regional waste management requirements.

The Agency's responsibilities in waste management involve the preparation of area based waste management plans and operating the waste licensing system, which includes the regulation, storage and treatment of controlled wastes. 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 these facilities, having regard to their potential impact on the environment and to local amenity which may include traffic generation, visual intrusion, litter, dust, noise, odour and vibration. It considers both the impact on wildlife, the needs of conservation and future development, and 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 waste facility 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 us to undertake maintenance and improvement works, construct flood defences and control works undertaken by others. The Agency has a general supervisory duty over all flood defence matters which requires us to work in close partnership with other drainage authorities.

Local authorities, and in this area Internal Drainage Boards (IDBs), are responsible for flood defence on 'ordinary watercourses', (see 5.4 'Regulation'). The appropriate legislation relating to ordinary watercourses is contained in The Land Drainage Act 1991.

Within the Nidd and Wharfe area there are six IDBs as illustrated in Figure 11. 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 environmentally sensitive management practices. Local authorities have similar responsibilities for non main river watercourses in their area.

**Memoranda of Understandings / 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.

A Memorandum of Understanding has also been signed with the Countryside Commission and the English Sports Council emphasizing the Agency's commitment to recreation.

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 Nidd and Wharfe area. These have been identified by:

- comparing the current state of the local environment (Section 6) with national and regional targets, where available;
- 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 following informal consultation and do not constitute policy statements. ***Comments on the issues, objectives and proposals are requested together with any new ideas/suggestions.***

Each issue will be presented in the following format:

| | |
|---|---|
| **ISSUE** | What is the perceived problem. |
| **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, involving costs and timetables, will only be established after the consultation phase. (see preface ii)
- Each issue must not be viewed in isolation. All the issues contribute towards a single vision - the future environmental well-being of the Nidd and Wharfe 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.*

## Issues, Objectives and Proposals

### ISSUE 1

Increase opportunities to work with others for the benefit and enjoyment of the environment.

**Background**

A number of initiatives have been made by the Agency and other groups and individuals aiming to improve the local environment and its enjoyment by the public. The Agency sees the strengthening of existing working relationships and forging new ones, through interaction with the public, as the way to ensure that the full benefits are derived from initiatives. ***Many proposals under other issues within this report also require collaborative working.***

**Objective**

Work with others in order to improve the environment and its enjoyment by the public.

**Proposals**

- Work in partnership with the National Trust, landowners, riparian owners and other organisations to develop and, where appropriate, implement an upland management model in upper Wharfedale. Examine the environmental effects, including river flow patterns in response to rainfall, of existing and past land management practices. See 2.4, 3.3 & 5.3.2.

- Work with MAFF: to ensure that the Countryside Stewardship Scheme (CSS) and other such schemes aid appropriate environmental management and promote the use of the CSS in the provision of conservation advice. See 3.3 & 5.6.

- Work with the Farming and Wildlife Advisory Group (FWAG) to promote farm conservation, fishery development projects and sustainable environmental practices. See 3.3 & 1.3.

- In liaison with English Nature, implement the national 'Memorandum of Understanding' on river Sites of Special Scientific Interest (SSSI) in relation to the appropriate section of Malham Arncliffe SSSI in the Plan area by March 1998. See 3.3.

- Work with Yorkshire Dales National Park (YDNPA), North Yorkshire County Council (NYCC) and landowners to encourage the use of soft engineering techniques (eg. the provision of buffer strips) to help combat riverbank erosion and fly-tipping problems. See 3.3 & 5.2.1.

- Progress the Yorkshire Dales Millennium Bid with YDNPA and partners. The project is set to improve habitat amenity and recreation within the National Park in association with local businesses and landowners for the benefit of all. See 3.3 & 5.6.

- Formulate Water Level Management Plans on behalf of MAFF for the River Fleet and Tadcaster Ings in consultation with interested parties. See 3.3.

- Continue to attend meetings of the Gouthwaite Board of Management, monitor the reservoir operating rules and advise on modifications, as appropriate. See 3.3 & 5.3.

## ISSUE 2

Education and the importance of environmental awareness and enhancement.

### Background

One of the most important ways in which the Agency can improve the environment is by raising the awareness of environmental issues and new legislation, thereby changing attitudes. This is best achieved by working with operators and customers to educate/inform them as to how the changes affect them, how to minimise the financial burden and how to maximise the benefits of such changes. Acting in an environmentally sustainable manner can benefit the individual and the environment.

### 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 throughout the Nidd and Wharfe 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 3.3 & 5.2.

- Encourage industrial site operators to set up training events to educate their staff on the importance of environmental awareness and improvements. See 1.3 & 3.2.

- Ensure awareness of the Environmental Protection (Special Waste) Regulations 1996 by advising, through targeted guidance, those producing, carrying and disposing of Special Waste of the revised procedures. See 1.3 & 6.3.

- Advise, through targeted guidance, those affected by the packaging waste regulations of their obligations. See 3.3 & 6.3.

- Provide information and guidance, through the supervision system, to the operators of waste management facilities on best practice and new developments. See 3.3 & 5.2.

- Liaise with farmers, developers and other individuals and organisations that have an impact on the environment to raise environmental awareness. See 3.2 & 3.3.

- Actively participate in local authority Local Agenda 21 Action Plans. See 1.3 & 3.3.

## ISSUE 3

Effluent discharges to the rivers Nidd and Wharfe.

### Background

Maintenance and improvement of the quality of the environment of the rivers Nidd and Wharfe are of strategic importance to the counties of North and West Yorkshire. In addition to being important fisheries of high conservational, ecological and recreational values, both rivers constitute a major source of drinking water serving (amongst other places) the cities of Leeds and Bradford.

### Objective

Protect and improve the water quality of the rivers Nidd and Wharfe.

### Proposals

- Ensure that Yorkshire Water Services Plc (YWS) completes the provision of improved treatment required under the EC Urban Waste Water Treatment Directive (UWWTD) and Fisheries Directive; and in addition extra treatment towards achieving River Quality Objectives (RQOs) funded by the National Environment Programme at the following sites. See 5.2,2, 6.4.2 & Appendix C.
  Glasshouses STWs (two),
  Harrogate North and Harrogate South STW.

- Ensure that wherever possible, sewage and industrial discharges that are 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 & 6.4.2.

- Identify priorities for improvements (in terms of greatest environmental benefit) to unsatisfactory Combined Sewer Overflows (CSOs) to be funded by YWS capital programme AMP2 / AMP3. Sites already identified for improvement schemes include Rudd Beck, Hookstone Beck and Coppice Beck. See 5.2.2 & 6.4.2.

## ISSUE 4

Threats to water quality from intermittent pollution events/incidents.

### Background

Farming and rural activities are of major economic importance in the Nidd and Wharfe area. These activities also have the potential to cause pollution, for instance, from the numerous slurry stores, silage clamps, sheep dips and oil and chemical stores. In addition, there have been a number of pollution incidents in the area resulting from industrial spills and road crashes. Threats from these, and a variety of other sources can not only affect drinking water supplies but are potentially extremely damaging to the environment.

### Objective

Reduce the environmental impact of activities which pollute or have the potential to pollute, and adopt precautionary measures to prevent pollution.

### Proposals

- Undertake chemical and biological sampling of rivers and utilise other data to target sub-catchments where water quality is still being affected by agricultural pollution, with particular emphasis on sheep dips in upland areas. See 5.2.2 & 6.4.2.

- Continue the programme of farm pollution visits and farm campaigns to advise on best practice (current campaigns cover the River Washburn and Weeton Beck areas). Evaluate the success of these campaigns by biological and fisheries surveys and identify localities that require follow up visits. See 5.1.1, 5.2.2 & 5.6.2.

- Assess the incidence of pesticide standard exceedances within the Nidd and Wharfe potable supply catchment, and if appropriate, develop a strategy for reducing them. Recently developed predictive models will be utilised. See 6.4.

- Identify and prioritise high risk locations on trunk road drainage systems and develop emergency response plans where spillage could potentially affect potable supply intakes (see Issue 15).

## ISSUE 5

Efficient management of the water resources whilst protecting the environment.

### Background

Large volumes of water, required to supply the towns in the Plan area and the conurbations of West Yorkshire, are abstracted from the Nidd and Wharfe river catchments. Abstractions also occur for industrial and agricultural processes. These abstractions must be managed so as to minimise damage to the environment. There is a need to work closely with large volume abstractors, such as water companies, to ensure that they are making efficient use of water resources through demand management control, while minimising adverse environmental effects of their activities.

The drought of 1995/6 caused extreme low flows and low water levels in still waters, exacerbated by abstraction for public water supply from the River Wharfe. The Agency and YWS are jointly reviewing the current knowledge and understanding of the behaviour of aquatic systems during and after such events, in order to effectively regulate abstractions and thus, minimise the potential for environmental damage.

### Objective

Ensure environmentally sustainable management of water resources, and supply structures; maintenance of suitable river flow regimes and water levels; and protection of ecology and amenity, whilst meeting the legitimate needs of abstractors.

### Proposals

- Monitor water usage within the supply zones of Leeds and Bradford. See 5.3.

River Wharfe

- Complete changes to industrial abstraction licences to ensure adequate flow of water over Pool Weir on the River Wharfe. See 5.3 & 6.4.1.

- Assess the screening arrangements at river intakes. Take measures to minimise entrainment and impingement losses of fish and other fauna. See 5.6.2.

Scar House and Gouthwaite

- Establish appropriate flow regimes in watercourses downstream of Scar House Reservoir, taking into account the needs of all legitimate users. See 5.3 & 6.4.1.

- Investigate compensation release regimes from Scar House Reservoir to protect the water environment. See 5.3 & 6.4.1.

- Assess the effect of compensation releases from, and siltation in, Gouthwaite Reservoir on the ecology of the River Nidd and the reservoir respectively. See 5.3 & 5.6.1.

Grimwith and Barden

- Assess the effects of regulation releases from Grimwith Reservoir on flow regimes, water resources and temperature; and their consequent impact on general ecology, fish populations and angling activity. See 5.3 & 5.6.2.

- Establish appropriate flow regimes in watercourses downstream of Grimwith and the Barden Reservoirs, taking into account the needs of legitimate users. See 5.3.

Chelker Reservoir

- Assess whether increased throughput of water at Chelker Reservoir has affected fish populations and angling success. See 5.5.2 & 5.6.2.

Washburn Valley

- Investigate with YWS methods of reducing the impact of intermittent releases from Thruscross Reservoir. See 5.3.

- Investigate the ecological impact of compensation flows from Lindley Wood Reservoir on the Lower Washburn, whilst maintaining rights of existing abstractors. See 5.3 & 5.6.

- Negotiate with YWS for release of water from supply reservoir chains to maintain wetted stretches below reservoirs. See 5.3.

**Objective**

Investigate the impact on the aquatic environment of the drought and low flow conditions and associated public water supply installations.

**Proposals**

- Review environmental data relating to the effects on the River of Wharfe of drought and abstractions, and report results of monitoring performed as part of the Drought Order agreements. See 5.3 & 6.4.1.

- Continue ecological monitoring to determine long-term effects of the drought and time limited licences, and determine mitigation requirements. Monitoring will include: physical habitat; water chemistry; invertebrates; crayfish; macrophytes; fish; birds and mammals, within and upstream of the areas affected by the operation of the Drought Orders over the minimum of 3 years, when no Order was in force, to determine the recovery. Undertake surveys to determine the effects of time limited licences, including a pilot study of the PHABSIM[1] model. See 5.3.2 & 6.4.

- Identify and ensure installation of habitat improvements and mitigation measures requested as part of the Drought Order conditions. See 5.3 & 5.6.2.

- Assess fish restocking requirements to ensure that these are carried out as appropriate. See 5.6.2.

**ISSUE 6**

Maintenance of groundwater quality and quantity.

**Background**

Groundwater is a vital source of both drinking water and base flow of rivers in the Plan area. It is particularly at risk from dispersed and diffuse sources of pollution that may accumulate over many years. These waters may be virtually impossible to clean up, even after removal of the source of pollution. It is, therefore, important to protect groundwater quality. This will safeguard both the availability of potable water and ensure maintenance of good quality input to the surface water resource.

[1]PHABSIM - Physical habitat simulation

**Objective**

Protect the quantity and quality of the groundwater.

**Proposals**

- Implement the Groundwater Protection Policy through the promotion of the guidelines to planning authorities, landowners and dischargers within the Plan area. See 5.3.2.

- Continue with the Agency's programme of defining groundwater source protection zones within the Plan area for the major groundwater abstractions used for potable supply. See 5.3.2 & 6.4.1.

- Establish baseline groundwater quality for the Sherwood Sandstone and Magnesian Limestone aquifers in the Plan area by examining the results obtained through the Groundwater Quality Monitoring Network. See 5.3.2 & 6.4.1.

## ISSUE 7

Risk of flooding to people and property.

**Background**

Historically, development has been heavily influenced by an area's rivers, which provided a route for communication and a source of water. In recent times, 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 practical, cost effective nor environmentally acceptable to protect all vulnerable properties. However, where the Agency's powers and funding will allow, the Agency 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 flood warnings.

**Objective**

Reduce the risk of flooding and provide a timely and accurate flood warning service.

**Proposals**

- Undertaking a review of the existing flood warnings to ensure that they conform to the nationally agreed standard (Emergency Response Levels Of Service - ERLOS) and implementing any improvements where necessary. See 5.4 & 6.4.3.

- Reviewing the flood risk and areas introducing new flood warnings where feasible. See 5.4 & 6.4.3.

- Installing new telemetry equipment, where appropriate, to record river levels or measure rainfall. See 5.4 & 6.4.3.

## ISSUE 8

Perceived lack of awareness of the concept of waste minimisation.

### Background

The recently issued white paper - 'Making Waste Work' produced by the DoE in 1995 - introduced the concept of waste minimisation and how this might be achieved. The four stages of this process are: to reduce wastes; to reuse waste materials of products; to recover value or energy from them during disposal, which may be through recycling but can also be through incineration with energy recovery; or, finally, to dispose of wastes. The white paper recognises that, for some waste streams, waste disposal to landfill may be the best practicable environmental option (BPEO). The Agency needs to be aware of the nature of the wastes produced and the degree of understanding by waste producers of the benefits of, and rationale behind, waste minimisation.

### Objective

Quantify the amounts and types of wastes produced within the area and raise awareness of the principles of waste minimisation.

### Proposals

- Undertake a Waste Producer Survey in sections of the Plan area to establish, with local authorities, industry and other organisations, what recycling initiatives are in place. Identify companies (eg. paper/board manufacturers, breweries etc.) and industrial estates (eg. Thorp Arch, Wetherby, Long Marston), where waste minimisation schemes can be encouraged. See 5.2.1 & 6.3.

- Promote recycling of waste at the point of production, eg. the screening and crushing of construction wastes, or where not applicable, at disposal sites. See 6.3.

- Identify companies and/ or industrial estates where waste minimisation schemes can be encouraged. Target companies or industrial estates to encourage uptake of initiatives such as the '3 E's scheme' (Emissions, Efficiency and Economics). See 6.3.

- Hold, promote and support educational events regarding recycling and waste minimisation. See 1.3 & 5.2.1.

## ISSUE 9

Activities exempt from waste management licensing in the area and the potential pollution from these activities.

### Background

Certain activities, notably the spreading of wastes on agricultural land, have been exempted from the waste management licensing process. Those undertaking such activities are obliged to register with the Agency, who in turn subject them to observation and inspection. There is some concern that not all of these activities are carried out within the terms of exemption, and the pollution consequences of this can be serious. As this takes place outside the licensing regime, the Agency gains no income from the supervision of exempt activities.

### Objective

Ensure that the potential pollution from exempt activities is minimised by confirming that the terms of the exemptions are adhered to.

### Proposals

- Identify the sites at which land spreading of waste takes place and instigate a supervision and monitoring programme to determine the effects of this activity on the environment. See 5.2 & 6.3.1.

- Establish a supervision and monitoring programme to ensure that all exempt activities are carried out within the terms of the relevant exemption. See 5.2 & 6.3.1.

- Encourage operators of exempt sites to adopt the standardised recording system based on the National Waste Classification Scheme, which the Dales Area is developing, in order to record waste input/output. See 5.2 & 6.3.1.

## ISSUE 10

Fly-tipping and nuisance pollution

**Background**

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

**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 & 6.3.1.

- 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 & 6.3.1.

- Work to reduce the amount of illegal tipping in the Plan area by targeting waste producers and carriers. See 5.2 & 6.3.1.

- Undertake an anti fly-tipping campaign in conjunction with local authorities and the Tidy Britain Group. See 5.2 & 6.3.1.

## ISSUE 11

Target resources to waste operations which have the potential to be environmentally damaging.

**Background**

The Agency is keen to improve the effectiveness of the supervision of waste management sites and industrial processes by developing methods to measure the effectiveness of functions in relation to their statutory duties.

**Objective**

Explore the opportunities of measuring the standard of waste site operations in the Nidd and Wharfe area.

**Proposals**

- Develop risk assessment techniques to quantify the impact of existing and proposed waste management facilities, and establish appropriate systems to measure the overall environmental impact of a waste management facility during its lifespan. See 5.2.

- Develop a greater understanding of long term processes of waste degradation and their impact on the environment. See 6.3.1.

- Expand the data available regarding the generation of landfill gas and the quality of ground and surface water at landfill sites. See 5.3 & 6.3.

- Explore the potential for energy production from closed landfill sites, particularly those defined as Special Sites under the terms of the forthcoming Contaminated Land Legislation. See 5.1.3, 5.2 & 6.3.1.

## ISSUE 12

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 12 species; lead partner for 11 species; and contact and lead partner for 1 habitat (chalk streams). The Agency is also responsible for over 100 actions in 60 Plan.

**Objective**

Promote the aims of the UK Biodiversity Action Plan in the Nidd and Wharfe.

**Proposals**

- Work with other organisations to ensure the protection of all species and habitats listed in the Biodiversity Action Plan. See 5.6 & 6.5.1.

- Implement assigned actions within the costed Species Action Plans for the conservation of those species for which the Agency has taken responsibility and are known to occur in the Plan area (otter, water vole, white-clawed crayfish and the pea mussel, *Pisidium tenuilineatum*), and any others subsequently found. See 6.5.1.

- Encourage the return of otter to the area in accordance with the Otter Action Plan by identifying and encouraging appropriate habitat management, through collaboration with outside organisations, landowners and the public. See 5.7 & 6.5.1.

## ISSUE 13

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 Nidd and Wharfe area already has a diversity of habitats and a number of sites of high conservation interest that are important to protect. Valuable habitats for wildlife, including fish, should be created and linked where possible. Damaged habitats should be studied to assess recovery and suitable management measures.

### Objective

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

### Proposals

- Encourage links between sites of high conservation interest in accordance with Article 10 of the Habitats Directive. See 5.6.

- Assess the arrangements for fish passage at all major weirs. Draw up a programme of improvements and prioritise actions. Formulate and evaluate measures to improve passage of fish over Skip Bridge gauging weir on the River Nidd. Introduce a fish monitoring programme to assess the effects of improvements and provide management information. See 5.6.2

- Assist angling clubs in the creation and development of new fisheries to reduce the pressure on established sites. See 5.5.2 & 5.6.2.

- Investigate opportunities for further tree planting and encourage sensitive farming practices wherever possible on riparian sites on the lower reaches of the rivers Nidd and Wharfe. See 5.1.1.

- Collaborate with other organisations to ensure the integrity of heritage features and archaeological sites. See 5.6.3.

**Objective**

Assess recovery from damaging activities and recommend restoration and mitigation measures.

**Proposals**

- Monitor habitat and fish stocks in the Buckden/Kettlewell area to assess speed of recovery, with regard to the drainage scheme and previous maintenance work. See 5.6.2.

- Assess the effects of abandoned lead mines on riparian land use and wildlife. See 5.1.1 & 5.6.

## ISSUE 14

Impact of development on the environment.

**Background**

The Agency is taking a pro-active role in the land use planning system. This involves advising the National Park Authority, 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 carefully considered, to recognise the potential adverse effects, and the benefits that development can have on the environment.

**Objective**

Seek to minimise the impact on the environment of development and encourage improvement where possible.

**Proposals**

- Encourage YDNPA and local planning authorities to include policies within their development plans which will assist the Agency in protecting the environment.

- Participate fully in the development control process and encourage environmental enhancement as part of the Agency's duty under the Water Resources Act 1991. See 3.3.

- Review links with local authorities in order to be able to respond, in particular, to air quality, waste management and planning issues. See 3.3.

- Assess the effectiveness of planning comments made by the Agency through monitoring of planning application decision notices. See 3.3.

- Ensure that the Agency's LEAPs are made available to all interested parties. Seek to ensure the concept of integrated local Environment Agency planning is taken forward by all relevant organisations. See 3.3.

## ISSUE 15

Development of road improvement schemes.

### Background

Road schemes can involve diversion, culverting or alteration to the lines of watercourses and their banks, and measures to deal with surface run-off. These measures can bring risk of flooding or damage to habitats, flora, fauna and fisheries.

### Objective

Ensure that the Agency interests are not adversely affected by road schemes.

### Proposal

- Ensure that adverse effects on the environment of the A1/M1 link road widening scheme, are minimised, and that compensatory and mitigation measures are completed and are effective 5.6.

## ISSUE 16

Adequacy of certification for radioactive substances in the Nidd and Wharfe area.

### Background

Each use of radionuclides and the disposal of radioactive substances within the Nidd and Wharfe area requires justification and is controlled by the use of certificates or authorisations issued by the Agency under the Radioactive Substances Act 1993.

### Objective

Ensure that the justification for each use or disposal of radioactive substances is periodically reviewed with the aim of minimising usage, disposal and holding stock.

### Proposal

- Carry out a review of the authorisations and certificates issued under the Radioactive Substances Act 1993, with particular attention to the justification of the use of radioactive materials and the quantity of radioactive materials involved. See 5.1.4.

## ISSUE 17

The significance of releases to air from Part A processes within the Nidd and Wharfe area relative to other release sources, such as traffic and Part B processes.

### Background

Air quality is the responsibility of the relevant local authority. The Agency has a specific role to regulate releases from Part A processes and will liaise with the relevant local authority to ensure that Agency driven activities are complementary with local air quality objectives.

### Objective

Develop an air quality strategy for Part A processes within, or that have an impact on, the Nidd and Wharfe area. The strategic assessment will include the impact of coal fired power stations located close to the boundary of the Nidd and Wharfe Plan area.

**Proposals**

- Generate an air quality strategy for Part A processes that complements local authority and national air quality objectives and strategies. See 6.2.1.
- Assess the impact on air quality in the Nidd and Wharfe area of the coal fired power stations located close to the boundary of the area. See 6.2.1.
- Encourage local authorities to develop a database of Part B processes. See 3.3 & 6.2.1.
- Assess the impact on air quality of Part A processes relative to the impact of other activities such as, traffic and Part B processes. See 6.2.1.

## ISSUE 18

The existence of ozone depleting substances from Part A processes.

**Background**

There is one Part A process in the Nidd and Wharfe area which releases ozone depleting substances to the environment. As part of the UK's commitment to the Montreal protocol on ozone depleting substances all such releases should be prevented or minimised.

**Objective**

Reduce releases of ozone depleting substances to protect the ozone layer.

**Proposal**

- Ensure that releases of ozone depleting substances from Part A processes operating within the Nidd and Wharfe area are prevented or minimised. See 6.2.1.

## ISSUE 19

The implementation of the IPPC Directive (1991).

### Background

The IPPC Directive will result in a number of activities in the Nidd and Wharfe area being controlled under integrated pollution control. It is unclear at present as to whether the Environment Agency or another body will implement the IPPC Directive. However, an initial assessment should be made as to the number of processes in the Nidd and Wharfe area which will be controlled under the Directive.

### Objective

Make a preliminary assessment of the number of processes that will be controlled by IPPC in the Nidd and Wharfe area.

- Identify affected industry/commercial groups and ensure awareness and compliance strategies are in place. See 5.2.2.
- Assess the Agency's role in the area when the IPPC Directive becomes UK legislation. See Appendix C.

## ISSUE 20

The impact of acidification.

### Background

Acid rain can have deleterious effects on plants and acidic runoff can be highly toxic to wildlife. The extent of the problem of acidic runoff depends on factors such as land use and underlying geology. Remedial measures may be required on a large scale in order to be effective but such measures may have adverse effects on ecology. Research is underway at Huddersfield University to identify areas likely to be affected by significant acidic runoff.

### Objective

Identify possibility and desirability of remedial measures.

**Proposal**

- Progress joint R&D, as part of a regional study, project to evaluate the mechanisms, extent and significance of acidification in the Plan area. Examine significance and extent of the problems caused and evaluate remedial measures. See 6.4.

## ISSUE 21

Minimise the impact of fish farms on the ecology of the area.

**Background**

Fish farms use large quantities of water that returns to rivers contaminated by fish faeces. Adverse effects may arise due to loss of flow between abstraction and discharge points, and organic pollution by the effluent. Escapees can have adverse effects on native fish stocks, while native fish may be lost by entry to the farm.

**Objective**

Assess and minimise the impact on the ecology of the receiving watercourses of fish farms.

**Proposal**

- Regularly monitor fish farms and their management practices, including screening of intakes and outfalls and compliance with consents. If necessary, review the consents to reflect the downstream quality required. See 5.1.6.

## ISSUE 22

Fisheries within the Nidd and Wharfe area.

**Background**

A thriving fishery is important to the Nidd and Wharfe area. The Agency will monitor fishery performance and investigate perceived problems with fish stocks and angling catches. This will include developing appropriate management procedures in accordance with the Regional Salmon, Sea Trout and Coarse Fish Strategies, and best practices.

**Objective**

Maintain, improve and develop fisheries.

**Proposals**

- Promote the development of self-sustaining stocks and reduce the requirement for stocking by encouraging angling management to move away from put-and-take towards catch-and-release. See 5.5.2.

- Investigate status of grayling stocks in the River Wharfe. Establish whether there has been any decline in grayling stocks in the catchment and identify the causes. Implement measures to reverse identified grayling stock declines, if appropriate. Monitor existing stocks of grayling at Bolton Abbey estate, and the effectiveness of recent conservation and enhancement measures. See 5.6.2.

- Monitor the upstream spread of coarse fish into salmonid waters and population increases in these areas, especially of pike. See 5.6.2.

- Investigate reasons and possible remedial measured for poor angling catches above weirs at Walshford on the River Nidd and Boston Spa on the River Wharfe. See 5.6.2.

- Collate data on extreme flow events and the rates of change between flow bands to determine their effects on fish stocks and angling. See 5.6.2.

- Assist in the assessment of predator impact on fisheries where significant threat has been identified. See 5.6.2.

# PART II

Part II is split into two sections.

Section 5 identifies uses and activities which are prevalent within the Nidd and Wharfe area.

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

Page Number

## 5.1 ECONOMIC

### 5.1.1 DEVELOPMENT

**Background**

The broad objective of local 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 local planning authorities (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 Procedures) 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 the potential to adversely impact the environment. However, the final decision on planning matters rests with the LPA. See 3.3 and Appendix A.

**Local Perspective**

Residential development

North Yorkshire County Council issued strategic guidance in their County Structure Plan for residential development. This seeks to reduce the rate of house building from the 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 to accommodate demographic changes, and to provide an adequate supply of affordable housing. Within the Nidd and Wharfe area the majority of housing development will be located in and around existing centres of population, notably in the larger settlements of Harrogate, Knaresborough, Wetherby, Tadcaster, Grassington, Otley and Ilkley.

Residential development can have a significant impact on groundwater resources. PPG12 "Development Plans and Regional Planning Guidance" states that particular attention should be paid to the protection of groundwater resources as, once contaminated, it is difficult to rehabilitate the resource. The Agency seeks to protect both the quality and quantity of groundwater sources.

Major residential developments must be served by adequate foul drainage disposal facilities. PPG23 "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 Nidd and Wharfe area (at time of going to print)**

| Local Authority | Title of Plan | Current Stage |
|---|---|---|
| COUNTY COUNCILS North Yorkshire | County Structure Plan. | Adopted November 1980. 3rd amendment adopted October 1995. |
| DISTRICT COUNCILS Craven District Council | Craven District Local Plan. | Draft Deposit June 1996. Public Inquiry for final draft June 1997. |
| Harrogate District Council | Harrogate District Wide Local Plan. | Deposit Draft June 1996. Public Inquiry late autumn 1997. |
| Selby District Council | Selby District Local Plan. | Consultation Draft February 1995. Deposit Draft expected June 1997. |
| UNITARY AUTHORITIES Leeds City Council | Leeds Unitary Development Plan. | Revised Deposit Draft June 1995. Public Inquiry was held June 1996 and currently considering modifications. |
| City of York Council | No single plan for this area at present. Local Plans include those covering the old York City area, Harrogate and Selby. | Revised Deposit Draft Plan expected September 1997. |
| Bradford City Council | Bradford Unitary Development Plan. | Deposit Draft November 1993. Amended deposit expected June 1997. |
| NATIONAL PARKS Yorkshire Dales National Park | Yorkshire Dales Local Plan. | Deposit Draft January 1993. Amendments February 1995. A second review will be available for public consultation early in 1998. |
| | Yorkshire Dales Minerals and Waste Plan. | Deposit Draft October 1995. Currently awaiting inspectors report. |

In addition to sites allocated for residential use in 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.

Within the Nidd and Wharfe area there are a number of settlements which have only rudimentary sewerage and sewage disposal facilities resulting in pollution problems to local watercourses. The Agency is in close liaison with LPA's to ensure development takes place in line with infrastructure improvements.

Rural Development

Agricultural activities have the potential to pollute the environment. The Agency enforces the Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) Regulations 1991 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.

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 request 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 for industrial development, as set out in the County Council Structure Plan, aims to meet the needs of existing employers and the local workforce whilst recognising the need to protect the environment.

Most new industrial development will be allocated to 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 development directly related which would result in substantial employment or other economic benefits to be located elsewhere. 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 the Nidd and Wharfe area tends to be light industry, distribution and services. These are developments which fall into Classes B1, B2 and B8 of the Town and Country Planning Act 1990 - Use Classes Order and largely fall outside the Integrated Pollution Control regime, but which can have negative impacts on the environment.

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.

The Agency will 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

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. Section 105 of the Water Resources Act 1991 requires the Agency to exercise a general supervision over all flood defence matters. However, the relevant authority for controlling development in floodplains is the LPA, under the terms of the Town and Country Planning Act 1990, in consultation with the Agency.

Surface water runoff is likely to be increased to some degree as a result of development where more impermeable surfaces, such as roofs and pavements, are created. Increases in both the amount and rate of water reaching rivers can, if not managed, lead to a greater risk of flooding. The Agency will seek to ensure that new development is carefully located and designed. Where appropriate, this will require measures to control surface water discharges to be incorporated into development proposals.

Government policy contained in Circular 30/92 provides guidance for Local Planning Authorities, and other organisations such as the Agency, on the arrangements for ensuring that planning decisions on development proposals take account of any risk of

flooding. The aim is to ensure that flooding risks, that may arise as a result of new development, are recognised and made an integral part of the decision making process undertaken by LPAs.

In this respect, the Agency has responsibility to prepare surveys under Section 105 of the Water Resources Act 1991 in order to define the nature and extent of flood risks. The results of the Section 105 surveys and other information provided by the Agency relating to flood defence matters are also to be taken into account by LPAs when preparing their development plans. See Issue 7 & sections 5.4 & 6.4.4.

### 5.1.2 TRANSPORT

**Background**

Central Government policy as outlined 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 $CO_2$ emissions, most of which is generated by road transport. National policy guidance is primarily set out in PPG13 'Transport'. This policy recognises the need to integrate land use and transport planning in such a way as to reduce the growth in the length and number of journeys made, whilst encouraging alternative means of transport in order to reduce reliance on the private car. See 6.2.1.

**Local Perspective**

The NYCC Structure Plan seeks to provide an adequate transport network, making use of existing facilities and, where necessary, providing new facilities. Major new developments include the upgrading of the A1, which is now largely completed and a new A1-M1 link road, which impinges on part of the Cock Beck catchment and has necessitated diversion of watercourses and large scale de-watering. The Agency continues to work closely with the Highways Agency to ensure that construction work does not result in pollution of nearby streams, and that mitigation measures are included for loss of flood capacity and habitat for flora and fauna (see Issue 15).

### 5.1.3 POWER GENERATION

**Background**

The 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 and nitrogen dioxide releases. Power stations are regulated by different organisations depending upon the size of the operation.

The Agency regulates the larger stations (greater than 50 megawatts (MW) in size) which have a greater polluting potential for all releases to the environment. These larger stations are regulated as Part A Processes under the Environmental Protection Act 1990 (Part I). Local Authorities regulate the smaller stations for releases to air only (see Issues 17 & 18).

**Local Perspective**

There are no power stations within the Nidd and Wharfe area of sufficient size to require regulation by the Agency. However, close to the south eastern boundary of the Plan area are Drax, Eggborough and Ferrybridge power stations. All of these stations are coal fired, Drax being the largest coal fired power station in Western Europe. These power stations are regulated by the Environment Agency as Part A processes under Integrated Pollution Control.

The environmental impact on air quality of each of the power stations is assessed in the relevant LEAP. Due to the size of the power stations and the tall chimneys used to disperse releases it would be anticipated that the power stations may have some effect on air quality, as yet unquantified, in the Nidd and Wharfe area.

### 5.1.4 STORAGE AND USE OF RADIOACTIVE MATERIALS

**Background**

The term 'radiation' is very broad and 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, can be regarded as radioactive. These atoms are commonly referred to as radionuclides.

The Radioactive Substances Act 1993 (RSA93) provides for controls to be exercised over the use and keeping of radioactive materials, and the accumulation and disposal of radioactive wastes. The Agency is responsible for the administration and enforcement of the Act in England and Wales which takes the form of registrations (keeping and using radionuclides) and authorisations (accumulating and disposal of radioactive waste).

The Nuclear Installations Act 1965 licenses "nuclear sites". These sites include nuclear power stations, nuclear fuel fabrication and reprocessing plants. There are no nuclear sites 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 an authorisation issued under RSA93 (see Issue 16).

**Local Perspective**

Within the Nidd and Wharfe area three sites are authorised for the accumulation and disposal of radioactive waste. These sites include a local hospital and scientific laboratories.

There are a further twenty sites that are registered to keep and use radioactive sources. These sources are used in activities such as agriculture (for crop flow measurement on combine harvesters), industrial radiography, density measurement devices and vehicle paint spraying activities.

### 5.1.5 MINERAL EXTRACTION AND MINING

**Background**

Minerals are an essential component for meeting the needs of the community and promoting economic growth. It is nationally recognised that an adequate and steady supply of aggregates must be produced to meet the needs of the construction industry. National guidance contained in Mineral Planning Guidance Note 1 (MPG1) "General Considerations and the Development Control System" requires each mineral planning authority to contribute to meeting the demand for minerals in their area.

However, there is a growing concern that mineral exploitation can have an adverse and irreversible impact on the environment. The government is committed to the integration of the principles of sustainable development into mineral plans, as outlined in Mineral Guidance notes 3 & 6.

Mineral operations often have a particularly detrimental effect on the environment compared to other forms of activity. 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 abstraction from boreholes.

Dewatering at mines and quarries can affect groundwater flow which may then affect not groundwater abstraction, but also springs and surface watercourses by reducing inflow and lowering the water table.

Discharges from sites can have an impact on receiving watercourses owing to the presence of high levels of suspended solids which can choke 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 can provide.

When appropriately managed or planned, the presence of mineral workings is not necessarily incompatible with environmental protection. Some habitats are irreplaceable, but for others mitigation or improvement by imaginative restoration may minimise adverse environmental impacts. 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 the floodplains.

The Agency is a statutory consultee on all planning applications for mining, quarrying and mineral extraction under the terms of the Town and Country Planning (General Development Procedure) Order 1995 and, as such, makes comments on these development proposals to ensure that environmental impacts are minimised. The Environment Act 1995 introduces new requirements for an initial review and updating of old mineral planning permissions granted between 1948 and 1982, in addition to a periodic review of all mineral permissions thereafter. Many of these early planning permissions are subject to inadequate conditions and this new legislation gives the Agency an important opportunity to secure new environmental standards at these sites.

**Local Perspective**

There are a number of active mineral workings within the Nidd and Wharfe area as shown in Table 2 on the following page.

**Table 2: Mineral Workings in the Nidd and Wharfe area**

| Mineral Working | Operator | Local Authority | Mineral Extracted | Preferred area for expansion |
|---|---|---|---|---|
| Black Quarry | RMC | NYCC | Limestone | NO |
| Coldstones Quarry | Pioneer | NYCC | Limestone | NO |
| Cool Scar Quarry | Bardon (England) Ltd | YDNPA | Limestone | YES |
| Threshfield Quarry | Tarmac | YDNPA | Limestone | YES |
| Swinden Quarry | Tilcon | YDNPA | Limestone | YES |
| Jackdaw Crag Quarry | Darrington Quarries | NYCC | Limestone | NO |
| Old London Quarry | Webfell | NYCC | Limestone | NO |
| Smaws Quarry | Redland | NYCC | Limestone | YES |
| Flixton Quarry | Murray Brown & Sons | NYCC | Chalk | NO |
| Allerton Park | ARC Northern | NYCC | Sand & Gravel | YES |
| Highmoor Quarry | York Handmade Brick Company | NYCC | Building Stone | NO |

Materials worked include limestone, chalk, building stone and sand and gravel. Within the YDNPA there are three large quarries which extract carboniferous limestone. Both Threshfield and Cool Scar quarries were identified in the Minerals and Waste Local as being preferred areas for future expansion.

Threshfield Quarry was originally granted planning permission in 1952 and this permission is currently being reviewed under the terms of the Environment Act 1995. The site currently extracts between 800,000 and 1 million tonnes of limestone per annum. The Agency is involved in the preparation of a report which aims to predict the effects of future quarry developments on the hydrogeological environment.

A planning approval for Phase 6 of the Threshfield Quarry development, which involves the deepening of the existing quarry, is also currently being determined and the Agency is involved in detailed discussions with Tarmac and the YDNPA with a view to minimising the environmental impact.

There are proposals to extend Cool Scar Quarry for the extraction of the remaining reserves within the existing plant area, allowing the removal of 490,000 tonnes of limestone. The Agency is considering the impacts this may have on the local environment. The limestone produced by the quarry is used for a wide variety of end products, including non-aggregate uses such as an additive for chemical grade magnesia, agricultural lime, and manufacture of rubber products, as well as a variety of aggregate uses, such as for asphalt and pre-cast concrete products.

The former National Rivers Authority was involved in lengthy discussions with the YDNPA and Tilcon following an application in 1994 for the extension of Swinden Quarry. The planning permission for this development included a Section 106 Agreement for a Quarry Water Management Plan which required the setting up of a Water Monitoring Group, to which the Agency has a long term commitment. The Agency will continue to have an input in the development of the quarry in the long term.

Other future developments within the Nidd and Wharfe area may include extensions to Smaws Quarry near Tadcaster and the Allerton Park Quarry adjacent to the A1 close to Boroughbridge, which have both been allocated as 'preferred areas' for future expansion in the NYCC Minerals Local Plan. The Agency will continue to strive to protect the environment in the Nidd and Wharfe area through its input into planning consultations and by direct discussions with mineral operators.

### 5.1.6 FISH FARMS

**Background**

High quality rivers have historically been subject to development for fish farm purposes, an industry which, over recent years, has expanded rapidly to meet a growing demand. Fish farming can lead to problems in the watercourses which receive the effluent from these sites, such as the accumulation of organic silts, increased nutrient loading, increased ammonia levels and escaped non-native fish. Problems can also arise from loss of flow in the donor river between the abstraction and discharge points. Changes in practices and better management of fish farms have reduced the water quality problems to some extent in recent years.

Discharges from fish farms are controlled by consents which impose conditions that regulate the quality and quantity of the discharge. Consent conditions are set by the Agency and take taking into account the upstream quality, available dilution and required downstream quality. In all cases a minimum treatment of settlement will be a pre-requisite, whereas in some situations biological treatment may be a requirement to achieve the necessary standards of discharge from the fish farm. Small streams may not be suitable for establishment of fish farm (see Issue 21).


Cowside Beck
R.Skirfare
R.WHARFE
Howstean Beck
Amaglil Beck
R.WIDD
Gouthwaite Reservoir
GRASSINGTON
Hebden Beck
R.DIBB
PATELEY BRIDGE
Burden Beck
Gill Beck
Ear Beck
BOLTON BRIDGE
Bow Beck
ILKLEY
KEY
FISH FARMS
CATCHMENT BOUNDARY

# NIDD & WHARFE AREA
# LOCATION OF FISH FARMS

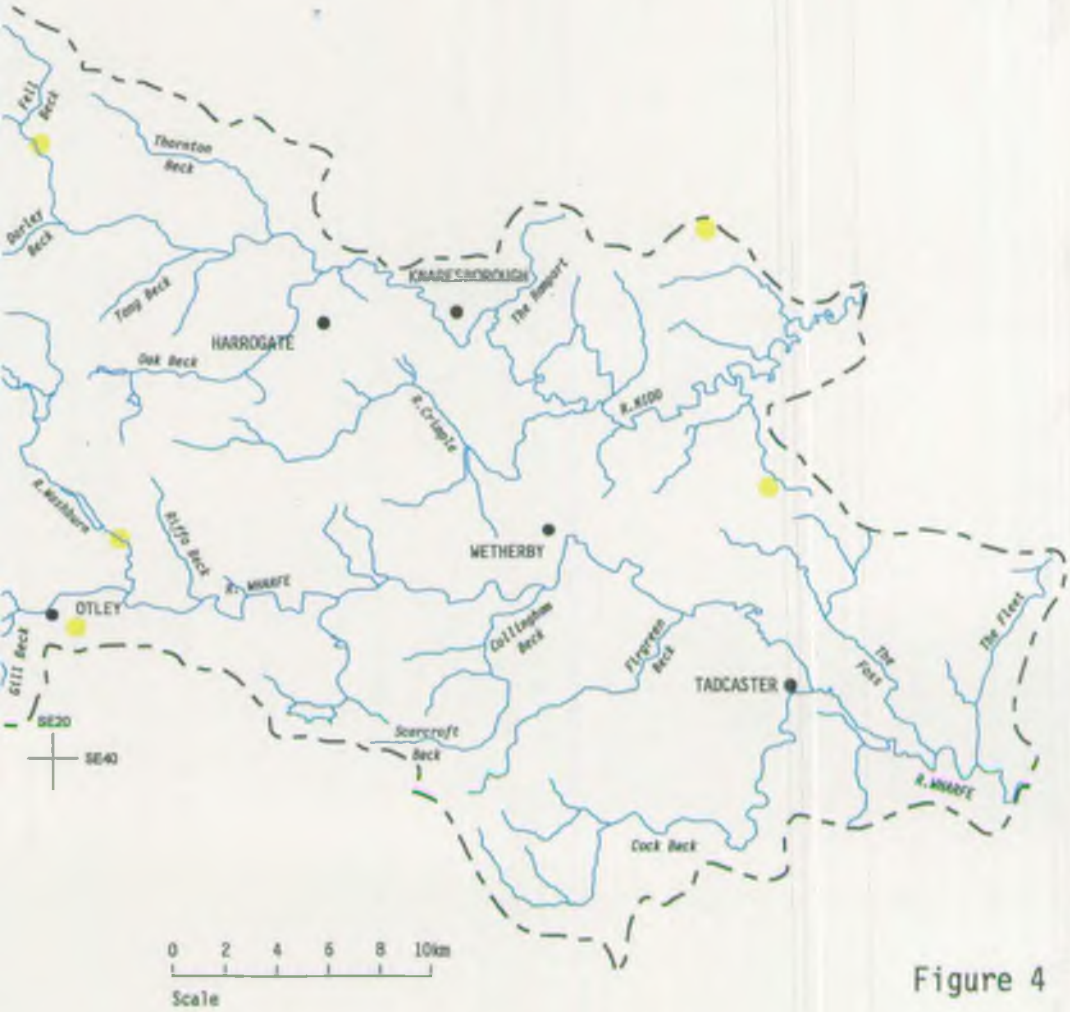



Figure 4

From 1st January 1999, screens and suitable by-passes will be required on all inlets and outlets from fish farms frequented by migratory trout and salmon.

**Local Perspective**

Fish farms have only presented localised water quality problems in the River Nidd catchment. However, in the River Wharfe farms are generally situated on smaller watercourses (see Figure 20), where it is difficult to maintain sufficient dilution during dry weather flow conditions. The effluent in such circumstances can cause a deterioration of the downstream river quality. Problems can also arise from low flows, where effluents are concentrated and abstraction structures block fish movement.

Most of the fish farm consents within the two catchments have been reviewed and where necessary, tightened to maintain the downstream RQO. A small number of farms still require amendments of their consents to reflect the required standards in the receiving watercourses.

In the past, there have been significant escapes of rainbow trout into the River Nidd from fish farms in the Glasshouses area. These proved to interfere with angling and had a detrimental impact on the ecology of the river. Legal action by angling clubs led to an agreement with fish farm managers regarding the screening of discharges. The Agency seeks to ensure that fish farm managers comply with screening requirements, which will become mandatory from January 1999

The development of new and existing fish farms in the catchment will require careful control to prevent the deterioration of water quality and other adverse effects on fisheries.

### 5.1.7 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 a direct 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 a statutory consultee for structure and local plans, as well as 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. This is largely the responsibility of the LPAs through Town and Country Planning legislation.

Whereas the Agency has a duty to promote access to water, while 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 projects and initiatives. These include the "Countryside Character Programme" - defining 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; and 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 woods.

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 of the 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 also been working with the Yorkshire Dales National Park Authority towards a 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. The Environmental Assessment (Afforestation) Regulations 1988 (IS 1988/1207) carry out the Directive's rules throughout Great Britain and are overseen by the Forestry Authority.

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, diversification of 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 (see Issue 14).

**Local Perspective**

The following information is based on descriptions of the Yorkshire Dales, Pennine Dales Fringe, Southern Magnesian Limestone and Vale of York "Natural Areas" as defined by English Nature and the Countryside Commission. These areas roughly correspond to the Nidd and Wharfe area as defined by the Agency.

The upland part of the Plan area has been heavily influenced by pastoral agriculture, the mainstay of the local economy for hundreds of years. The relatively high altitude in this area, short growing season and high rainfall means that there is limited potential for agricultural intensification, but despite the marginal nature of the farmland, the landscape has a long history of settlement, with evidence of extensive prehistoric (possibly Bronze Age) field patterns on the dale sides.

Extensive areas of the upland are managed as grouse moors for shooting and grazing, and burning regimes having regard to this are practised.

Whilst the upland landscape is largely treeless, remnants of ancient woodland survive on the steeper valley sides.

Species rich limestone and acid pastures occur in the dales and are maintained by sheep and cattle grazing. There is concern that overgrazing is being encouraged as a result of the Hill Livestock Compensation Allowance (HLCA), since landowners are paid for the number of sheep raised, rather than being paid on an acreage basis.

The extraction of minerals has also left its mark on the landscape, with extensive limestone quarrying continuing and the remains from mining of metals and burning of limestone in previous centuries clearly visible in a number of locations.


## KEY

AGRICULTURAL POLLUTION INCIDENTS 1992

- SEVERE (NONE WERE RECORDED)
- SIGNIFICANT
- MINOR

- MAJOR PLANTATIONS AND WOODLANDS
- ENVIRONMENTALLY SENSITIVE AREAS
- MAJOR NATIONAL TRUST SITES
- NATIONAL PARK BOUNDARY
- CATCHMENT BOUNDARY

# NIDD & WHARFE AREA
# LAND USE. AGRICULTURE AND FORESTRY


Figure 5

The Pennine Dales Fringe is characterised by a similar pastoral system of agriculture, but a more enclosed landscape of small fields is defined by drystone walls and hedges. Richer soil and modern crop varieties have allowed crop production, including arable cultivation, to have an increasing impact on the landscape.

Woodlands are far more of a feature of the Pennine Dales Fringe than the high upland areas. Broadleaved woodland predominates on the valley sides, in small woodlands or as hedgerow trees on the valley floor, whilst coniferous and mixed plantations are commonly found on estates and are managed for timber production and game shooting.

The belt of Magnesian Limestone which runs from north to south through the Plan area, (from north of Ripon down to beyond South Yorkshire) parallel to the Pennine Dales Fringe, is a particular feature affecting local land use. The area is characterised by the low rounded profile of the limestone ridge, dissected by the rivers and dry valleys, the farmland being more open than on the Pennine Dales Fringe. The majority of the woodland occurs in large blocks associated with the large estates, parklands and game coverts, and a number of these, particularly on steeper slopes, are classed as ancient, semi-natural woodlands, important for lichens, bryophytes and invertebrates. See 5.1.5.

The river valleys and woodlands are a particularly important habitat in the intensive arable landscape of the Pennine Dales Fringe.

The Vale of York, which marks the eastern end of the Plan area, is characterised by low lying, level flood plains, although minor ridges and glacial moraines provide subtle local variations in topography. Intensive arable farming is the dominant land use, and medium to large fields are enclosed by low, flailed hedges with few hedgerow trees. Some improved grassland areas occur, and small farm woodlands, shelter belts and game coverts add to the diversity of the landscape.

The dry sandy soil which occurs in some areas supports heathland vegetation, although many sites have been planted up with conifers or been left to revert to birch and scrub, thus destroying these traditional landscape features and wildlife habitats formerly maintained by sheep grazing.

Intensive arable use and intensive grazing of improved pastures have impoverished the landscape and conservation interests of the Vale of York.

Landscape conservation and recreation can also be seen as a form of land use linked to agriculture and forestry. Large parts of the Plan area are within the Yorkshire Dales National Park or the Nidderdale Area of Outstanding Natural Beauty, where tourism is of major importance. In addition much of upper Wharfedale and the Skirefare Valley are designated as an Environmentally Sensitive Area (ESA) under the MAFF scheme to encourage the conservation management of traditional landscapes.

Large blocks of land in upper Wharfedale are owned by the National Trust who also encourage traditional landscape management, as part of what has been described as the "heritage industry".

Water storage may also be regarded as an important form of land use, with an exceptional number of reservoirs in the Plan area, both in the uplands, such as Grimwith, Barden and Chelker, and in lower river valleys, and Gouthwaite and the series of reservoirs in the Washburn Valley. Where appropriate, water storage has been combined with recreational use as at Grimwith and in the Washburn Valley.

The Agency will continue to work with the National Park and other local planning authorities; government bodies such as English Nature, MAFF and the Farming and Rural Conservation Agency; and other bodies, such as the National Trust and RSPB, to encourage good land use practices, environmental protection and improvement measures.

Of particular interest to the Agency is the Countryside Stewardship Scheme, now run by MAFF, which operates outside the ESAs, and which allows opportunities to create buffer zones.

The Agency has been involved in a number of collaborative projects with the Farming & Wildlife Advisory Group (FWAG), such as the preparation of Whole Farm Conservation plans, waterside conservation projects and in particular the Lower Nidd Landscape Conservation Project (Ainsty Barn Owl Project). It is hoped that these links will continue, thereby promoting voluntary conservation projects by farmers and landowners.

The Agency will also continue to work in cooperation with the Forestry Authority following the third edition of the "Forest and Water Guidelines", which advise landowners and managers how to carry out forestry operations in a manner sympathetic to the water environment.

### 5.1.8 TOURISM

**Background**

Tourism makes an important contribution to 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 will apply strong safeguards within its remit to ensure that the character of the Nidd and Wharfe area is not jeopardised.

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, accommodation in particular, can be an important form of diversification. Proposals will be supported provided they are not in conflict with the need to protect the environment.

**Local Perspective**

There is a close relationship between tourism and the environment. Tourists come to the Wharfedale and Nidderdale areas because of their picturesque market towns and villages and its attractive countryside, particularly in the upper parts of the Dales. Tourism, therefore, has the potential to successfully relate to the LEAP's strategic approach, as it utilises renewable resources and natural advantages of the area. It can also be a positive force for the conservation of the Plan area's main environmental assets. However, tourism which is insensitive to the needs of the environment, can adversely affect the area, with the ability to dilute local character and distinctiveness, and threaten the very qualities that make the area attractive.

Harrogate, Knaresborough, Harewood House, Bolton Abbey, Grassington, Kilnsey Crag, Buckden and Pateley Bridge, all attract large numbers of visitors, especially from the major conurbations of West Yorkshire. This results in increased visitor traffic on the A6038, A65, A658, B6160, A59, B6451 and the B6265 during the main holiday periods and at week-ends throughout the year.

The seasonal nature of tourism presents some particular problems with regard to sewage and waste disposal; use of resources such as water; local air quality due to traffic pollution; and disturbance to wildlife at crucial times (these issues are covered in more detail in other areas of the text i.e. 5.1.2, 5.2.1 and Issue 15). The Agency will work with local planning authorities and other bodies to ensure that these issues are addressed.

## 5.2 WASTE MANAGEMENT

### 5.2.1 SOLID WASTE DISPOSAL

**Background**

Waste management activities have the potential to 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 Nidd and Wharfe area.

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.

**Local Perspective**

There are currently 30 licensed waste management facilities in the Nidd and Wharfe area made up of landfill sites, scrapyards, transfer stations and civic amenity sites (see Figure 6).

Landfill Sites -15 licensed sites

Landfilling of wastes is the primary waste disposal method employed for wastes generated within the Plan area. However, there are no landfills now operating which are suitable to receive household waste, and all household waste that is not recycled is landfilled in modern clay lined sites outside the area. In the part of the Plan area which lies within NYCC, collection of household waste is the responsibility of district


CRAVEN
GRASSINGTON
PATELEY BRIDGE
HARROGATE
BOLTON BRIDGE
A65
A59
ILKLEY
BRADFORD
OTLEY
A660
SE40
SE20
KEY
CATCHMENT BOUNDARY
ADMINISTRATIVE BOUNDARY
TRANSFER STATION
CIVIC AMENITY SITE
LANDFILL
METAL RECYCLING SITE
SCRAPYARD
0 2 4 6 8 10km
Scale

# NIDD & WHARFE AREA
# SOLID WASTE DISPOSAL

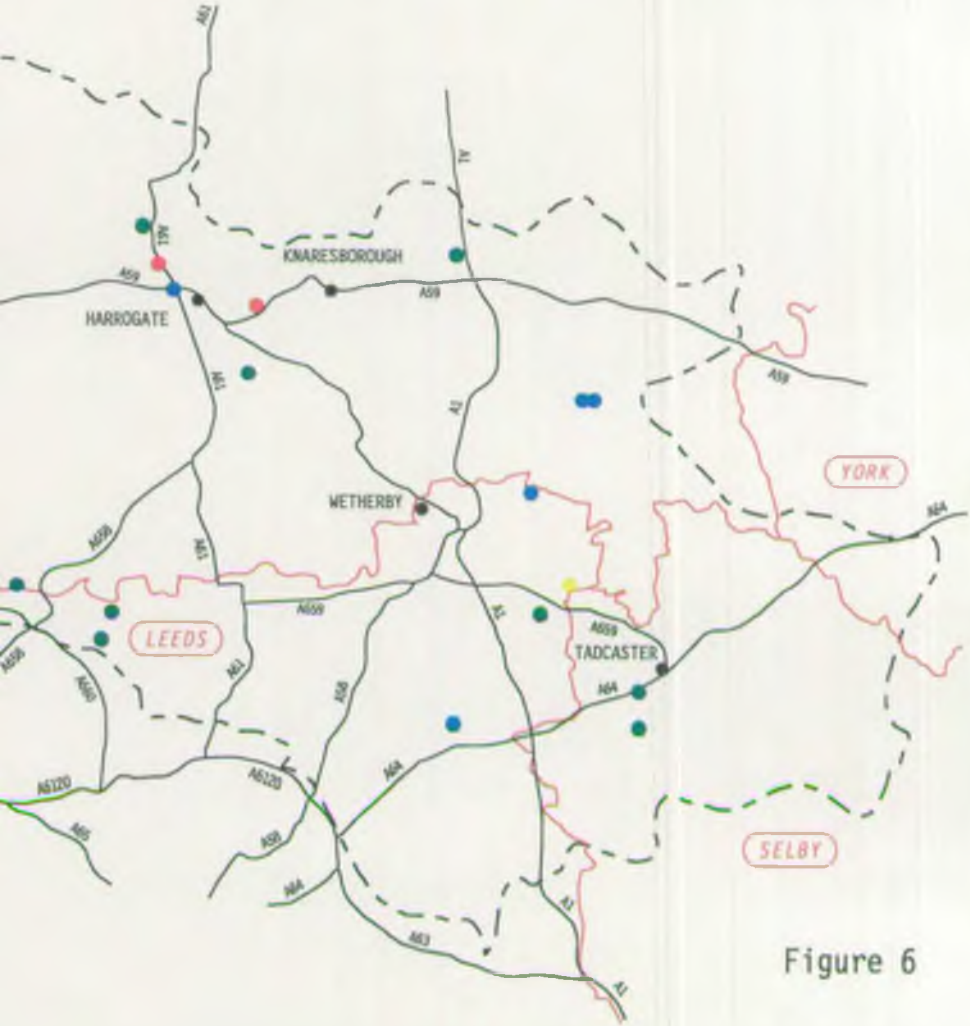



Figure 6

councils in their role as Waste Collection Authorities (WCAs). In the south of the catchment, Leeds, as a unitary council, acts as collection authority. North Yorkshire

County Council in the north of the area, and Leeds Metropolitan District in the south, act as Waste Disposal Authorities and have the responsibility for making arrangements for the disposal of waste collected by the district. The arrangements for the disposal of waste are made through a competitive tendering process. In 1993 the NYCC set up an 'arms length' waste disposal company (a LAWDC or Local Authority Waste Disposal Company), YorWaste, to tender for the waste contracts. To date a LAWDC has not been set up in the south of the Plan area.

There are three producer-operated landfills within the area which dispose of the waste at, or close to, the point of production. One is operated by the concrete industry, one by a brewery and the third by the operators of the Great Yorkshire Show in Harrogate. All three sites are licensed to take relatively inert wastes.

The bulk of the landfills in the Plan area are relatively small sites operating mainly for the benefit of the construction and demolition industries, and taking in the main relatively inert wastes; there are 11 sites licensed to take these wastes.

Metal Recycling Sites (Scrapyards) - 6 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 six licensed metal recycling sites within the area which regularly receive visits from the Agency. All the sites are all 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 for recycling mainly metals, although more forward looking operators are identifying and separating plastics. There are no secondary metal processors in the Plan area.

Waste Transfer Stations - 6 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 economically viable to pre-sort into two categories, ie the inactive and active wastes, thereby reducing 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.

Of the six transfer facilities in the area, four are operated by skip hire companies, one is operated by Transco (formerly British Gas) mainly for materials which arise during the maintenance of gas pipelines. The remaining transfer facility bulks up on difficult liquids including some special waste.

Waste Movement

With certain exceptions, all carriers of controlled waste must register with the Agency in the area where the business is based under the terms of the Duty of Care (DOC) legislation. Once registered, businesses may carry waste in any part of the country, therefore, the fact that there are fewer than 50 registered carriers within the area is not a reflection of the scale of waste movements. The full picture of waste movements is currently unknown but are thought to be quite high within the area because, as has previously been stated, all household waste, and waste of a similar nature, is disposed of outside the area. In addition the area is likely to be a net importer of wastes derived from construction activities.

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. Organisations carrying out 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 area 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. This takes place typically at twenty or more locations within the area.

Deposits include the following: blood and guts from abattoirs; biological effluent treatment plant wastes; and food processing wastes.

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 Plan area 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 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 Plan 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 Plan 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. 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. Some 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 Nidd and Wharfe area.

There are two disused gasworks sites and about ten disused landfill sites generating detectable levels of landfill gas in the Plan area.

Contaminated land is of particular importance because of its potential impact on the environment arising from the escape of contaminants to surrounding land, groundwater and adjacent watercourses.

Recycling

All of the District Councils within the area operate a number of recycling schemes. 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 the only kerbside collection scheme is operated in the southern part of the Plan area by Leeds MDC. There are a large number of 'bring' recycling schemes available in the remainder of the area, taking wastes such as paper, glass, textiles, cans, oil and metals.

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 if the facilities are a long way off.

To resolve this problem, the districts of Harrogate and Craven have introduced mini-recycling centres, of which there are about 100 in the area. These are usually

containers sited in the car parks of public houses, community centres, schools, village halls, etc. The containers are sub-divided, to provide compartments for the different materials. These containers are periodically taken away to a central collection point to be emptied, the materials stockpiled and sold on.

Another recycling scheme which is being encouraged in the catchment by the councils of Selby, Bradford and York is home composting. Householders' own green waste is put into composting bins provided free of charge or, at low cost. 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. Within the next twelve months the Agency is planning to target waste producers in the area to find out what they do with their wastes in the hope of encouraging best practice. (See Issues 8 & 9).

### 5.2.2 INDUSTRIAL AND TRADE EFFLUENT DISPOSAL

**Background**

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

The 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. Each of these are described in greater detail in Appendix B.

The Agency is continually reviewing discharge consent conditions to ensure that objectives will be met. Such reviews 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 Plc 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.

**Local Perspective**

Sewage Disposal

A number of small sewage treatment works (STW's) serve rural communities situated along the upper river valleys of the Nidd and Wharfe. Whilst these STWs are often of adequate size to meet the demands of the local population, the popularity of the upper catchments as recreational and holiday destinations can lead to overloading of some works for short periods during peak holiday season, when large numbers of visitors temporarily reside in the area. See 6.4.2 & Issue 3.

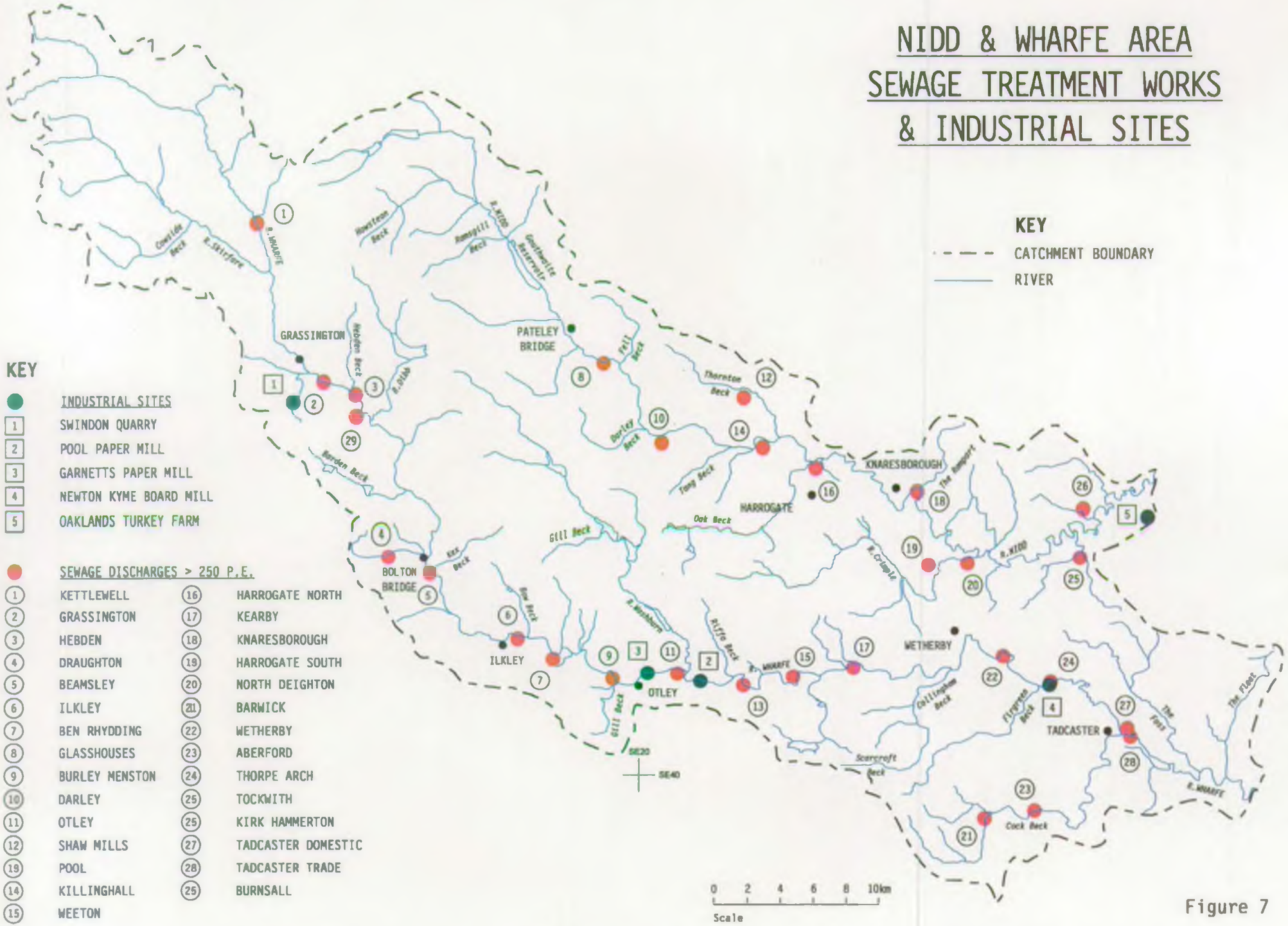
Further down the valleys of the rivers Nidd and Wharfe, larger community STW's are progressively encountered. With the exception of one or two privately operated treatment plants, which mainly serve commercial premises in isolated locations, the main source of sewage effluent arises from STWs and Combined Sewer Overflows (CSO's) owned and operated by YWS. There are 49 community STWs in the catchment, of which 29 serve a population in excess of 250 p.e. (population equivalent).

At Glasshouses, in the Nidd catchment, the STW is situated on two separate sites some distance apart, both of which have expired their lifespan. A scheme is in the early stages of progress to rebuild the works and consolidate on one site.

Improvement of the quality of the discharge from Glasshouses STW is expected in 1997/98 following the reconstruction of the works. This should help ensure that good water quality is maintained in the River Nidd down to Harrogate.

Within the Nidd catchment, the largest STW's at Harrogate North and Harrogate South are responsible for the most significant problems. Harrogate North discharges to the lower reaches of Oak Beck at a point where the water quality is already suffering from

# NIDD & WHARFE AREA SEWAGE TREATMENT WORKS & INDUSTRIAL SITES




## KEY

- INDUSTRIAL SITES
  - 1 SWINDON QUARRY
  - 2 POOL PAPER MILL
  - 3 GARNETTS PAPER MILL
  - 4 NEWTON KYME BOARD MILL
  - 5 OAKLANDS TURKEY FARM

- SEWAGE DISCHARGES > 250 P.E.
  - 1 KETTLEWELL
  - 2 GRASSINGTON
  - 3 HEBDEN
  - 4 DRAUGHTON
  - 5 BEAMSLEY
  - 6 ILKLEY
  - 7 BEN RHYDDING
  - 8 GLASSHOUSES
  - 9 BURLEY MENSTON
  - 10 DARLEY
  - 11 OTLEY
  - 12 SHAW MILLS
  - 13 POOL
  - 14 KILLINGHALL
  - 15 WEETON
  - 16 HARROGATE NORTH
  - 17 KEARBY
  - 18 KNARESBOROUGH
  - 19 HARROGATE SOUTH
  - 20 NORTH DEIGHTON
  - 21 BARWICK
  - 22 WETHERBY
  - 23 ABERFORD
  - 24 THORPE ARCH
  - 25 TOCKWITH
  - 25 KIRK HAMMERTON
  - 27 TADCASTER DOMESTIC
  - 28 TADCASTER TRADE
  - 25 BURNSALL

Figure 7

a combination of unsatisfactory CSO discharges and cross connections along its length as it passes through northern Harrogate. This is also the case for Harrogate South which discharges into the lower reaches of Crimple Beck, where the same problems occur from southern Harrogate, exacerbated by low flows combine to place significant pressure on the watercourse.

In Harrogate, major improvements are to be undertaken at both North and South STW's to attain the RQO standards for the River Nidd and Crimple Beck (see Appendix B). Also as part of an ongoing programme of identifying sewerage deficiencies in various towns throughout Yorkshire, drainage plans have been developed by YWS for principal towns and settlements with the aim of prioritising problem CSO's for subsequent attention and improvement. Harrogate has been identified as a priority for such improvements relating to Coppice Beck, Hookstone Beck and Rudd Beck. Schemes have already been agreed and are currently in progress on Rudd Beck and Hookstone Beck. (See Figure 19).

Recent major STW schemes completed in the Wharfe valley combine with other improvements to achieve a water quality classification of "very good" in the main river as far down to Tadcaster (see Appendix D).

The River Wharfe below the weir at Tadcaster is tidal. Between this point and the confluence with the River Ouse, the only major discharges of sewage effluent, directly into the River Wharfe, are from the two sewage treatment works at Tadcaster. This is an unusual situation in that one works is for domestic sewage and the other treats the effluent from the three breweries in the town.

Cock Beck is the major tributary of the tidal River Wharfe. It receives sewage effluent discharges from STW's at Aberford and Barwick. In addition, there are several private STW discharges, primarily in the lower reaches of the River Wharfe.

At the very top of the Cock Beck system, on the outskirts of Leeds, there are a number of surface water discharges which are contaminated by domestic cross connections. A lack of dilution in these upper reaches means that these discharges are having a measurable effect on water quality. Investigations are presently underway to determine the extent of the problem. Once this is completed, a priority list for remedial action will be drawn up and discussed with Leeds City Council.

None of the major sewage discharges in the Wharfe catchment currently affect the GQA classification allocated to the respective receiving watercourse.

There are several smaller STWs serving small settlements throughout the Nidd and Wharfe area. None of these significantly affect water quality.

Also, as is usual in rural areas, there are numerous septic tanks, some of which discharge directly to a watercourse. Other than occasional aesthetic problems, these discharges do not affect main river water quality.

Industrial and Trade Effluent

In the upper river valleys of the Nidd and Wharfe, the river flows through sparsely populated areas where livestock farming is the predominant industry. Mineral extraction is centred on the Grassington area. Lower down the valley paper/board mills are situated at Otley, Pool and Newton Kyme. Garnetts Mills at Otley discharge to the YWS treatment works at Otley via a private sewer.

Paper/board mills have a large demand for water and consequently their effluent can comprise a significant proportion of the river flow, particularly in dry weather. It is, therefore essential that they are regularly monitored for compliance with consent conditions, as a variation in effluent could have a measurable effect on river quality in certain conditions. In the Wharfe valley, limestone quarrying is a major industry which is continuing to develop. Limestone quarrying around Grassington is extensive, particularly at Swinden and Threshfield where two of the largest quarries are situated. At Swinden, the large quantities of surface and groundwater generated within the site are heavily laden with solids, much of which is colloidal, and requires treatment prior to discharge into Linton Beck.

The Agency has already entered into discussion with the operators of Swinden Quarry regarding the proposals to further extend the site and for its long term restoration to amenity land. Discussions with the company will continue for some time as the implications for the effluent treatment plant and the receiving watercourse are considerable.

Proposals to extend quarrying at Threshfield are likely to necessitate similar treatment, prior to discharge to the watercourse, of surface and groundwater generated within the site.

There are few direct industrial discharges within the Nidd catchment, the only significant operator being Oaklands UK Ltd at Moor Monkton, a major poultry processing plant discharging to a small tributary of the River Nidd. There have consistently been problems in developing reliable effluent treatment at this site due to the difficult nature of the waste. Detailed discussions are underway between the Agency and the site owner with a view to finally resolving this longstanding problem.

Tadcaster, on the lower Wharfe is dominated by three breweries. As already discussed there is a treatment plant dealing solely with the trade effluent from these sites. Cooling waters and surface waters, however, are discharged directly to the River Wharfe.

One site has its own pipeline, while the other two discharge via public surface water sewers. Where it has been considered necessary, the Agency's predecessors have consented these discharges. In recent years due to the combined efforts of the Agency (as the NRA), YWS and the breweries, many longstanding problems relating to these discharges have been resolved.

Part of the eastern edge of Leeds drains into the Wharfe catchment and is dominated by small industrial estate developments. All the area is sewered, therefore discharges of trade effluent to watercourse are not an issue. The nature of the sewage system in this area means that all foul sewage is pumped out of the catchment, and treated and discharged elsewhere. However, surface water from these estates is discharged into Cock Beck or one of its tributaries.

There are a number of pollution problems which are currently under investigation, but these surface water discharges are not affecting water quality enough to change the GQA classification, (see 6.4.2 and Appendix D).

Over the past few years, several open cast coal sites have been established around the Garforth area. Local opinion dictated that these sites should be closely monitored. As yet, no pollution problems have been encountered with any of the sites.

## 5.3 SURFACE WATER AND GROUNDWATER ABSTRACTION

### 5.3.1 SURFACE WATER ABSTRACTION

**Background**

Abstraction of water for potable, industrial and agriculture purposes are important uses 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 total volume of water. It is a duty of the Agency to ensure that water resources are managed effectively and for the benefit of everyone. This role is fulfilled principally through the use of a system of water abstraction licensing. As a legal requirement of the Water Resources Act 1991. Almost anyone who wants to abstract water from a surface water source must primarily obtain an abstraction licence.

Abstraction licences specify a number of different things, including the total hourly, daily and annual quantities authorised to 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. See 6.4.1 & Issue 5.

**Local Perspective**

The Plan area is a significant source of water for the conurbations of West Yorkshire, especially Bradford, Leeds, Dewsbury, Morley and other parts of the grid, as well as for demands within the area such as Harrogate. Water from these catchments is used to supply other parts of West Yorkshire, via the Yorkshire Water Grid. Table 3 identifies the main source of public water supply in the Plan area.

In the River Wharfe, near Addingham, when natural river flow drops below preset thresholds, YWS must release the volume of water they intend to abstract the following day from Lobwood and The Hollins on the following day from Grimwith into the River Dibb. When flows are very low, more water is released from Grimwith than is abstracted from the two sites.

**Table 3: Major Sources of Public Water Supply**

| BRADFORD supplied by..... | LEEDS supplied by..... |
|---|---|
| Scar House Reservoir | Fewston Reservoir |
| Angram Reservoir | Thruscross Reservoir |
| Upper and Lower Barden Reservoirs | Swinsty Reservoir |
| Lobwood River Abstraction | Arthington River Abstraction |
| The Hollins River Abstraction | |

*N.B. Intermediate reservoirs at Chelker and Eccup also form links in some of these supply routes.*

Gouthwaite Reservoir (River Nidd) and Lindley Wood (River Washburn) are compensation reservoirs. The water collected in them is released to the rivers during the summer months to compensate for the reduction in flow caused by the supply reservoirs upstream.

In addition to public supply, water is abstracted for industrial processes, spray irrigation, fish farming, domestic uses and agricultural supplies. Water abstracted for water power and fish farming is returned to the river, with no net loss of water. However, the stretch of river between the abstraction and discharge points must be protected by prudent licensing of the abstraction. Although domestic uses and agricultural abstractions represent less than 1% of the total volume of water abstracted they account for over 40% of the total number of abstraction licences (See Figure 8).

# NIDD & WHARFE AREA
# SURFACE WATER ABSTRACTIONS 1995-6


Figure 8

**Table 4: Abstractions in the Nidd and Wharfe area**

*source: ALFRED archive 16 April 1997*

| Catchment | Surface (Rivers and springs ) | Groundwater | Total |
|---|---|---|---|
| Upper Wharfe | 110 | 52 | 162 |
| Lower Wharfe | 74 | 125 | 199 |
| River Nidd | 86 | 164 | 250 |
| Total | 270 | 341 | 611 |

## 5.3.2 GROUNDWATER SUPPLY AND PROTECTION

### 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 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 North East Region has its own guidelines for the technical determination of groundwater abstraction licences. In addition to checking that there are sufficient available resources 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 abstraction. See 6.4.1.

### Local Perspective

The Carboniferous rocks contain many small aquifers from which the groundwater is mainly discharged as springs. Local public water supplies in Wharfedale and Nidderdale utilise many springs. These sources are often remote, subject to water quality problems after heavy rain and are liable to fall to low flows after prolonged dry periods. Groundwater flow in the Carboniferous rocks has been modified extensively in some areas by lead mining, and drainage from the old workings is used for public and private potable water supplies, notably in Greenhow where the Eagle Level Adit is used by YWS.

# NIDD & WHARFE AREA
# GROUNDWATER ABSTRACTIONS 1995-6

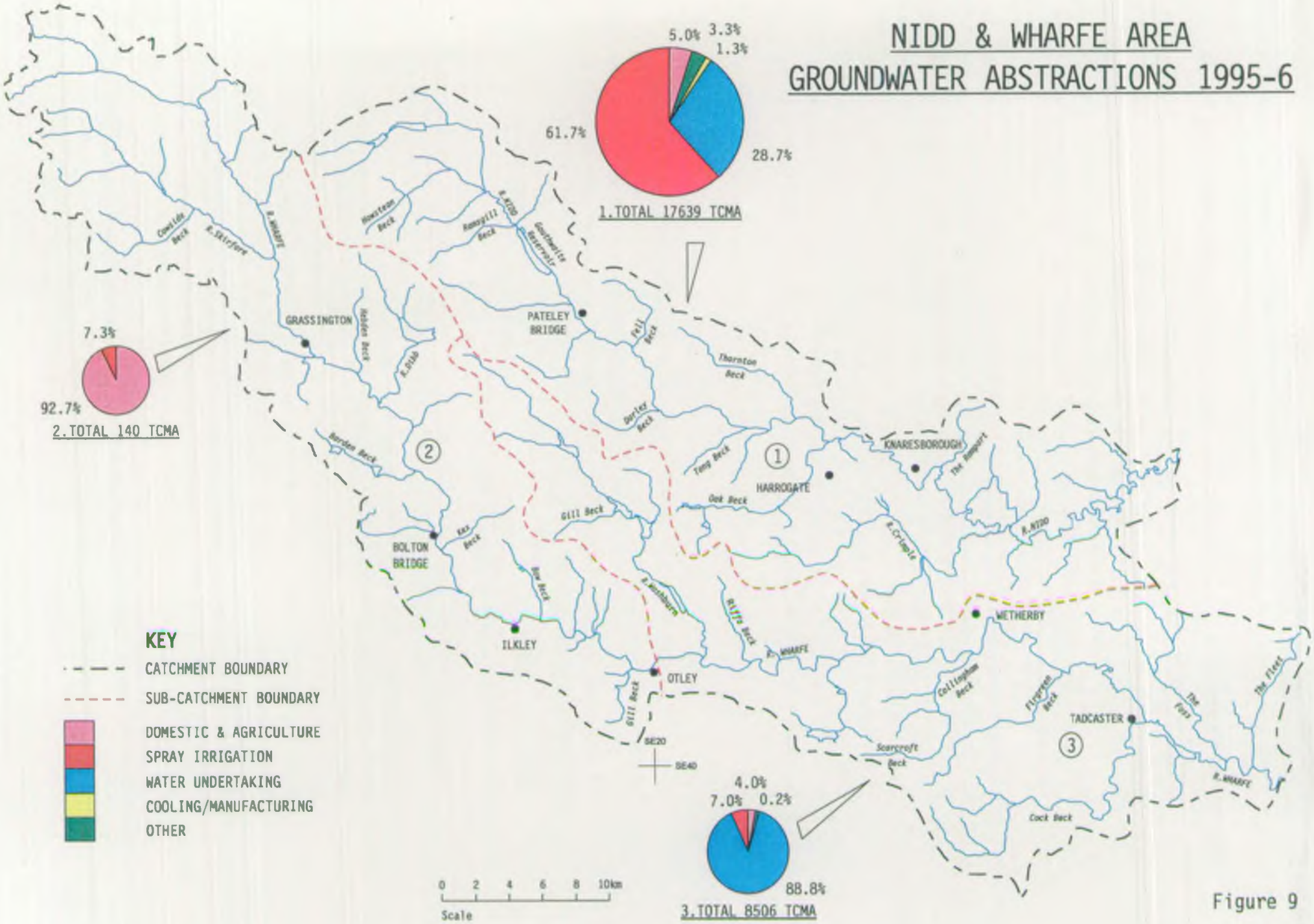



Figure 9

There are many licensed spring abstractions in Wharfedale and Nidderdale that provide domestic and agricultural supplies, and these form the majority of abstraction licences but only a small proportion of the authorised abstraction (see Figures 8 & 9). It is likely that there are other small boreholes and spring abstractions used for domestic purposes, but the Agency is not aware of all abstractions comprising less than 20 cubic metres per day which are exempt from licensing.

The Magnesian Limestone is utilised for minor and major groundwater supplies. Most of the licences in these areas are for domestic and agricultural supplies and for spray irrigation. The Tadcaster Breweries (together with many other abstractors) take large volumes of water from this aquifer.

The Sherwood Sandstone is a major aquifer underlying the lower reaches of the Plan area. There is one licensed YWS borehole abstraction from the Sherwood Sandstone which provides public water supply to Leeds, Bradford and Harrogate. Groundwater abstraction for potable supply is the most significant use of groundwater.

The Millstone Grit aquifer is also important for private water supplies in the Nidd and Wharfe area.

Although a large number of domestic and agricultural boreholes exist throughout the area the total volume authorised for abstraction is small. Spray irrigation licences represent 5.1% of the total, annual licensed abstraction. The guidelines adopted by the Agency for the management of groundwater abstraction ensure that groundwater abstraction has no unacceptable impact on spring and surface waters (see Figure 8).

## 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 or 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, water flows into the floodplain. These natural flood plains (which are as much a part of the river system as the channel which carries normal flows), provide extra capacity for the storage and movement 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, as undeveloped flood plains should be allowed to


Cowside Beck
R.Skirfare
R.WHARFE
Howstean Beck
Hamsgill Beck
R.WEED
Gouthwaite Reservoir
PATELEY BRIDGE
GRASSINGTON
Wesden Beck
R.DISB
Barden Beck
Gill Beck
Eccs Beck
BOLTON BRIDGE
Bow Beck
ILKLEY

# NIDD & WHARFE AREA
# MAIN RIVER & WASHLANDS

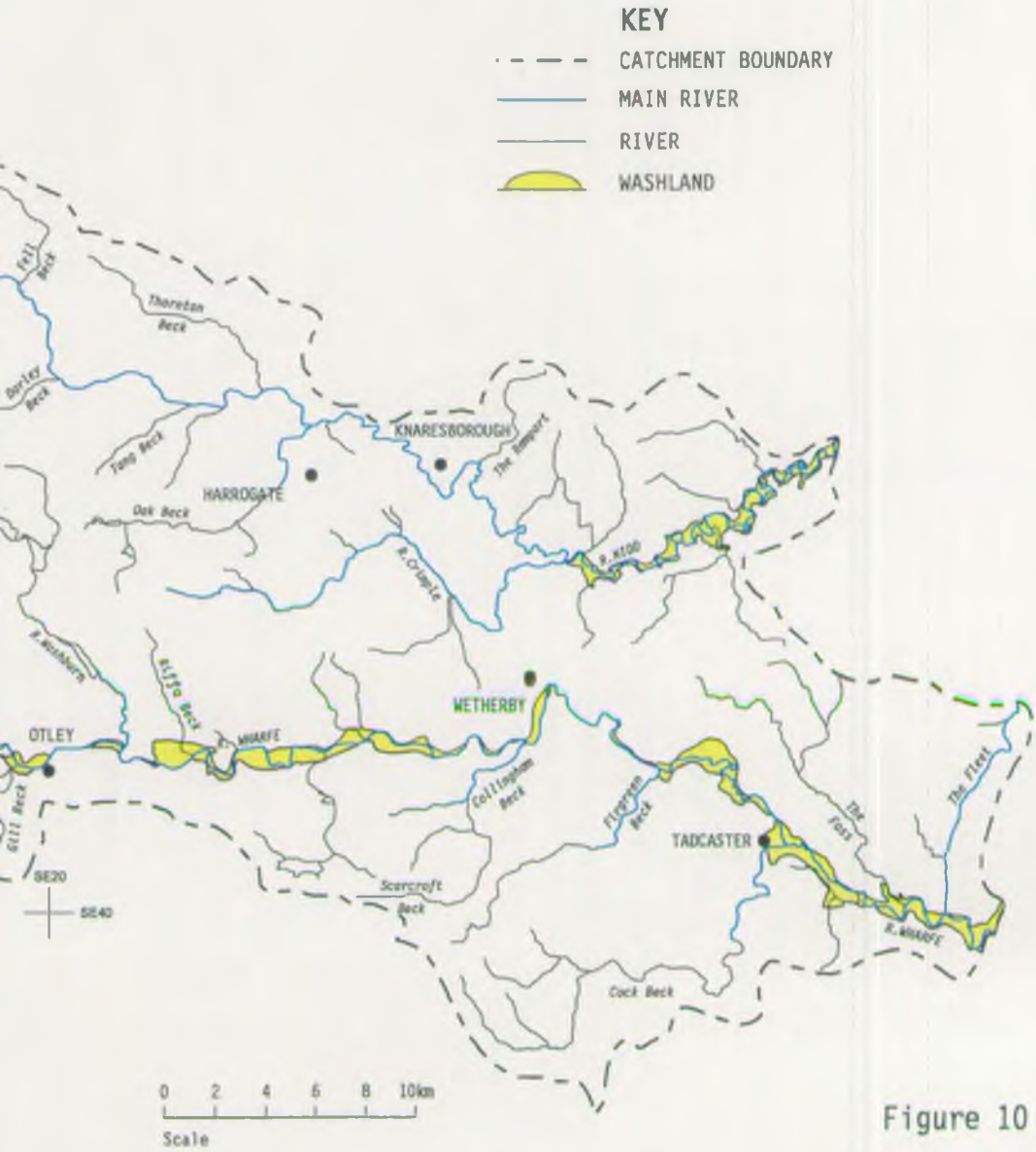



Figure 10

play their natural role in providing continuity between the river and its floodplain as an essential part of the water cycle. See 6.4.4, Issue 7 and Appendix A.

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. See 6.4.4.

**Local Perspective**

There are no major urban flood defence works on the River Nidd. However, at Pateley Bridge there are some low level informal defences providing some protection. The main flood defence systems on the river are washlands. These are areas where existing banks are allowed to overtop in times of high flow and the land behind is used as storage.

The washlands serve two purposes in that they reduce the frequency of flooding, thereby benefitting agriculture and they reduce levels of major floods to the benefit of urban areas downstream. The washlands have been formed by raising and strengthening banks, where needed, and 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 which might result in a reduction in storage volume.

In addition, Yorkshire Water's management of water levels in Gouthwaite Reservoir has been agreed by the Environment Agency and includes provisions to reduce the peak flow and volume of floods on the River Nidd downstream of the reservoir. The River Nidd is extensively embanked along both banks from the A1 eastwards to its confluence with the River Ouse. This results in the whole of the river valley acting as a washland. The banks are not owned by the Agency but are maintained under permissive powers. All the flood defence systems for the River Nidd are washlands which operate by overspill from the river.

There are extensive washlands on the non tidal River Wharfe from Ilkley downstream.

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

Although the River Wharfe is influenced by the tide as far upstream as Tadcaster weir the highest flood levels are dominated by fluvial, rather than tidal flows. There are large controlled washlands on the tidal Wharfe from Tadcaster down to the Ouse confluence on both banks. The most significant of these are at Tadcaster and Ryther.

Schemes to reduce the risk of flooding have also been undertaken to directly protect property at Tadcaster, Cock Beck Confluence, Kirby Wharfe, Bolton Percy, Bowlam Bank, Ulleskelf, Ryther and Button Hill.

The only urban flood defence works on the non-tidal Wharfe are at The Avenue, Collingham; and there are extensive washlands from Ilkley downstream. On the tidal Wharfe (downstream of Tadcaster weir), schemes have been undertaken either directly to protect property and land from flooding or to improve the function of washlands, thereby reducing flood risk elsewhere.

At Tadcaster there are riverside defences mainly comprising earth banks but with a short sheet piled section. Just downstream of Tadcaster there are sluices which control water levels on Cock Beck upstream to Stutton. There is a pumping station at Nun Appleton which controls levels in Fleet Drain to prevent flooding at Copmanthorpe and Appleton Roebuck. At Ulleskelf there is a flood wall that is designed to protect 20 properties. Additional schemes are at Kirby Wharfe, Bowlam Bank, Ryther, Button Hill, and Bolton Percy.

Regulation

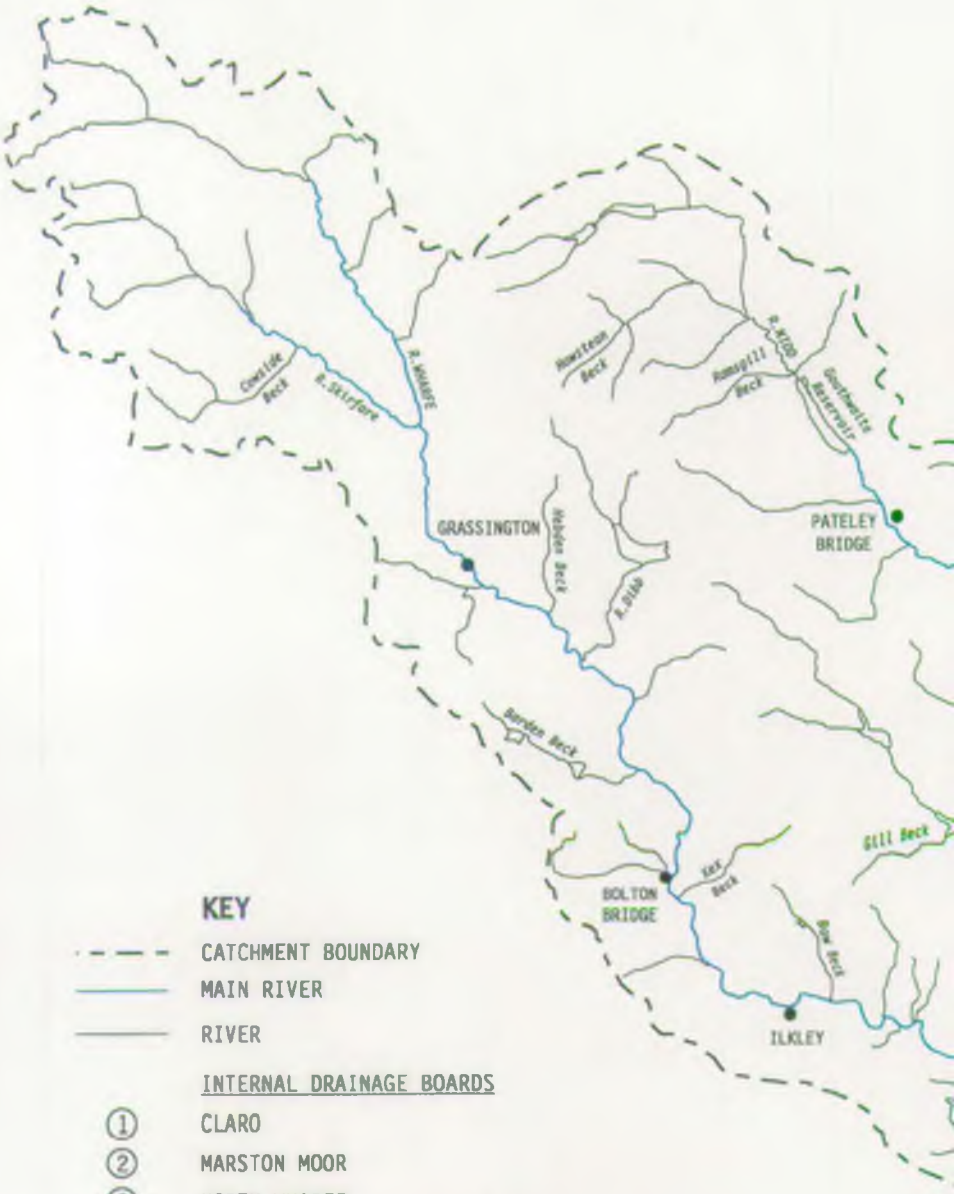
*Main River*

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, main rivers include 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 and 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 the flood defences on ordinary watercourses. Local authorities are also responsible for protecting the coast from erosion by the sea. The appropriate legislation relating to ordinary watercourses can be found in the Land Drainage Act 1991.

Within the Plan area there are six Internal Drainage Boards, illustrated on Figure 11.

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 initiate, and fund research and development, and provide advice on flood defence matters.




## KEY

CATCHMENT BOUNDARY

MAIN RIVER

RIVER

INTERNAL DRAINAGE BOARDS

1. CLARO
2. MARSTON MOOR
3. NORTH WHARFE
4. APPLETON ROEBUCK & COPMANTHORPE
5. SOUTH WHARFE
6. ACASTER

# NIDD & WHARFE AREA
# INTERNAL DRAINAGE BOARDS

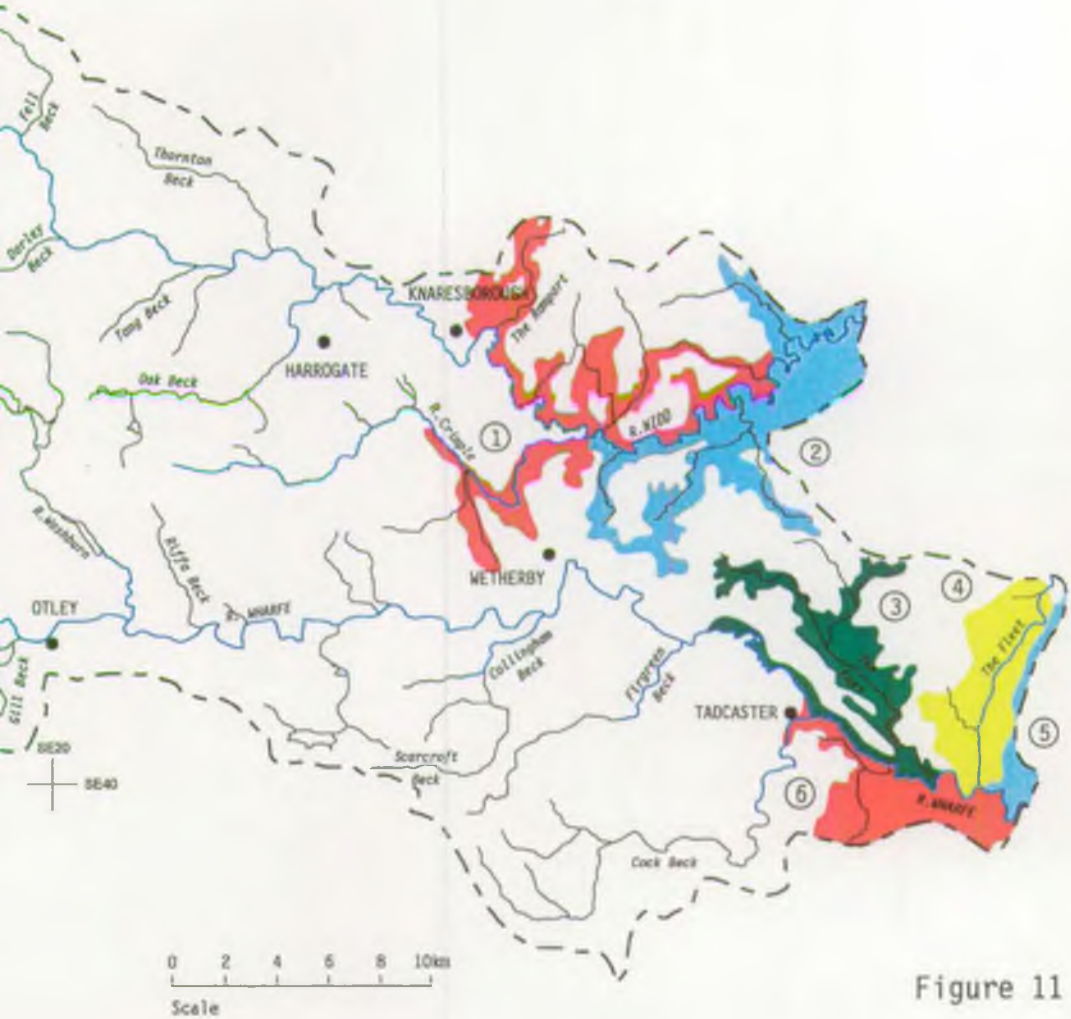



Figure 11

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

The extent of the 'main river' and the locations of significant washlands within the Nidd and Wharfe Plan area are shown on Figure10.

Within the Nidd and Wharfe Plan area, consideration will be given to making recommendations to MAFF for 'maining' significant watercourses identified by the Section 105 Surveys, provided that the following criteria are also 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 maps, directly upstream of the crossing.

Within this Plan area, the watercourses identified for investigation under Section 105 are Clark Beck, Stone Rings Beck, Hookstone Beck, Rud Beck and Star Beck, i.e. all tributaries of the rivers Nidd and Crimple. Land adjacent to the River Nidd at Pateley Bridge and Summerbridge is also being investigated. Consultants were appointed to conduct the surveys and reported to the Agency.

Land Drainage Consents

The Agency's consent is required for works on or within close proximity to the bank of a main river. This includes construction in, over, under or within 8 metres of the watercourse, including such activities as the planting of trees and mineral extraction. On ordinary watercourses, consent is only required for building any structure that would have an effect on the flow. These powers are used to ensure that people both upstream and downstream of any works are not exposed to an increased risk of flooding.

Access along river banks , needs to be preserved for Agency staff and equipment wherever possible, especially for emergency works. To ensure this access is kept clear, the Agency will 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 for such works, the Agency will also take into account whether the proposed works include measures to conserve and enhance the environment.

Water Level Management Plans

Recent guidance has been issued by the Government on the preparation of Water Level Management Plans (WLMPs) for Sites of Special Scientific Interest and other areas of high ecological or landscape importance. This will provide a means by which the water level requirements for a range of activities in a particular area, including agriculture, flood defence and conservation, can be balanced and integrated. Where the Agency is the operating authority, liaisons will take place with English Nature to prepare a plan to ensure that all appropriate key water levels are safeguarded.

Three sites in the Plan area have been identified as requiring Water Level Management Plans (WLMP). For each of the three sites, Auberts Ings, Tadcaster Ings and The Fleet, an Interim Management Statement has been produced, and the precursor of the full WLMPs, which are due to be released in 1998.

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 all water bodies, which have the capacity to hold over 25,000 $m^3$ above the lowest adjacent ground level, as 'Reservoirs'. These reservoirs must fulfil the requirements of an annual safety inspection by a qualified engineer. This ensures that the areas are safe and do not pose any flood defence risks. The Plan area contains numerous washlands, some of which fall within the scope of the 1975 Reservoirs Act. These washlands have been registered under the Act and will be subject to regular inspections by consultants.

The following washlands have been registered as Reservoirs under the Act :
Tadcaster, Hackenby and North Ings at the Wharfe / Cock Beck confluence. In addition, Bolton Ings will be inspected and registered. See Figure 10.

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 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, covering a variety of traditional water uses such as operation of mills, creation of navigation channels, fish farming and amenity.

Improvements

*Capital Works*

The Agency can build new flood defences if flooding is a serious problem in a particular area. The Agency usually only builds new defences to protect built up areas from flooding. It must be demonstrated that all such schemes are technically, economically and environmentally sound. The Agency keeps a list of schemes called a 'Programme of Capital Works' which helps to plan works for the future.

When constructing new defences, the Agency sets out to ensure that the character and environment of the area will not be adversely affected.

Within the Nidd and Wharfe area a number of initiatives and schemes have been investigated to improve the standard of flood protection. Capital Schemes are under consideration in the following areas:

*Addingham* - A group of properties close to the river has experienced flooding to varying degrees in the past. There is a history of flooding from Heathness Beck (Back Beck) and Marchup Beck (Town Beck) which flow through the village. Significant flooding occurred in 1982, 1991 and 1995.

*Bolton Bridge* - A number of properties are at risk from flooding from the River Wharfe and Hambleton Beck.

*Burnsall* - Twenty properties are at risk during high flows in the River Wharfe.

*Castley / Pool* - A small number of residential and agricultural properties are at risk along Castley Lane on the left bank of the River Wharfe downstream of the A658 road bridge. A scheme has been previously considered and rejected by residents. Although 15 properties were flooded in 1995 there has been no request for a new scheme to be considered.

*Fir Green Beck* - This is a main river right bank tributary of the River Wharfe with the confluence midway between Wetherby and Tadcaster. The main flood risk area is at Bramham.

*Kettlewell* - A small number of residential properties are at risk from the River Wharfe

backing up Park Gill Beck, which is a left bank, non-main river tributary.

*Otley* - An area of some 13 ha adjacent to the River Wharfe suffers from frequent flooding.

*Pateley Bridge* - Approximately 80 properties are at risk from the River Nidd. The existing flood defences are substandard.

As discussed earlier in the text, 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 the impact of the development on flows or water levels in watercourses within the river 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. Proactive reduction of further risk is determined largely by local authorities on the granting or refusal of such proposals during the planning application stage.

Flood Warning & 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 still occur and on occasion represents a risk to human life. With regard to public safety the Agency operates 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; information from flood defence staff in the field.

The North East Region uses a network of telemetry stations providing data on river levels and rainfall. These stations alert staff when risk conditions occur, and warning and operational procedures are carried out accordingly to laid down instructions. The telemetry network is continuously 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) to produce predictions of flood events and the forecasting of 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 on high risk areas and to accurately 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.

From September 1st 1996, the Agency has taken the lead role in making sure that flood warnings get through to the people 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 regularly and issued to the media for broadcasting to the public. Alternatively, the public can call the Floodcall information line (0645 881188) to hear details on the current situation in their area. In addition to providing flooding alerts and information to the public, the Agency issues flood warnings to the Emergency Services and Local Authorities. 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.

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.

The following areas within the catchment are covered by flood warnings: Addingham, Ilkley, Burley in Wharfedale, Otley, Pool in Wharfedale, Castley Lane, Collingham, Wetherby, Tadcaster, Stutton (Cock Beck), Ulleskelf & Ryther on the River Wharfe and Pateley Bridge on the River Nidd.

The current flood warning service only covers main river and coastal/tidal flooding. As part of a national project, Emergency Response Levels of Service (ERLOS), consideration is being given to extending the service to include flooding from ordinary watercourses.

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, within 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

In addition to the flood warning role, at times of high water levels the Agency patrol the flood defences, operate flood defence structures, remove blockages and carry out any

emergency repairs needed. Operational work, comprising inspections and clearing of flap valves, weedscreens and the operation of penstocks is carried out on the River Wharfe in times of flood. No operational work, other than the general inspection of floodbanks, is carried out on the River Nidd in times of flood.

District councils have permissive powers to offer assistance during floods. This may include placing sandbags, moving possessions and evacuating people. Each council has its own 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 councils are 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 at times of more serious flood events. Public surface water sewage systems are the responsibility of the local water company.

## 5.5 RECREATION AND AMENITY

### 5.5.1 RECREATION AND WATER BASED ACTIVITY

**Background**

Recreation and amenity is another important use of the water environment. This is now recognised as an industry which plays a vital role in the local economy, even in areas where there is no direct charge for the use of water and associated amenities. Passive or informal recreational use of water includes viewing scenery, walking near water and enjoying the environment, fauna and flora to be found in, on or near the water. Active recreation associated with water includes activities such as rowing, sailing, canoeing and angling. Angling is a very important recreational pursuit within the area which is discussed further in this section.

There is an extensive network of public footpaths and bridleways within the Plan area. Other means of access to the still waters and some parts of the river are 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 recreation into account in the performance of all its functions and.it can pass byelaws under Section 210 of the Water Resources Act 1991 for purposes connected to carrying out its functions.

The Agency has a vital role to play in liaising with and advising other bodies to ensure that a co-coordinated approach is taken to the strategic management and development of recreation, which allows the optimum potential of a water body to be realised without detriment to the environment. See 3.3, Appendix A & section 5.5.

**Local Perspective**

The upper reaches of the Nidd and the Washburn valley lie in the Nidderdale Area of Outstanding Natural Beauty (AONB). The upper Wharfe also lies within the Yorkshire Dales National Park. Designations such as these mean that the amenity value of these areas and the resultant pressure on the environment is high. Walking is a major pastime, with several well-defined, long distance paths crossing the catchment of the two rivers.

The 270 mile 'Pennine Way' skirts the top of the catchment and crosses the Dales Way, a popular 80 mile route which follows the course of the River Wharfe from Ilkley to the head of catchment on Oughtershaw Side and finishes at Bowness on Windermere. The 70 mile Ebor Way starts in Ilkley passing through York on the way to Helmsley. Within the Nidd catchment there is the 'Nidderdale and the Pioneer Walk' a 66 mile walk, via Dacre Banks, Linton, Malham and Kettlewell, which links to several youth hostels.

There are three circular walks within or crossing the catchment: the 44 mile Ainsty Bounds Walk via Tadcaster through the Vale of York, follows footpaths along the banks of the rivers bounding the Ainsty area, including the rivers Wharfe, Ouse and Nidd; the Otley Nine Leagues runs for 27 miles through woodland and alongside rivers and open fields from Otley Chevin Visitors Centre around Pool-in-Wharfedale and Ilkley; the Dales Traverse passes over rough grazing and limestone pasture via Kilnsey. The major long distance walks are shown in Figure 12.

In addition to long distance walks, there are many short walks which focus in and around the two rivers and their tributaries. These include specially designed walks around the old lead workings on Grassington Moor near the River Wharfe and around Ashfoldside Beck on the River Nidd. The Valley of Desolation and The Strid on the Bolton Abbey Estate are also well featured in the walking guides of the area. Harrogate District Council have spent the last couple of years improving the footpaths and signs within the Nidd Gorge between Harrogate and Knaresborough.

Riverside sites such as the Bolton Abbey Estate, Pateley Bridge, Ripley Estate and Knaresborough act as 'honey pot' sites, providing toilet and parking facilities, and drawing tourists away from other sites considered to be more sensitive.

There are also many sites away from the riverside such as Brimham Rocks near Harrogate (owned by the National Trust), providing recreational facilities, car parking, toilet facilities and access for people with disabilities.

Although formally agreed access on both rivers is limited, casual canoeing takes place along much of the length of the River Wharfe and along the River Nidd down to Knaresborough. The River Wharfe is seen as the more important of the two rivers for canoeing, and Burnsall is used as a starting point for many canoeists. At Appletreewick, the landowner has created a national canoe slalom course. Access to this is restricted to weekends in order to balance the use of the river with angling interests. Below Thruscross Reservoir, in the Washburn valley, there is an agreement between YWS and the canoeists whereby controlled releases allow events to be held on a slalom course below the reservoir.

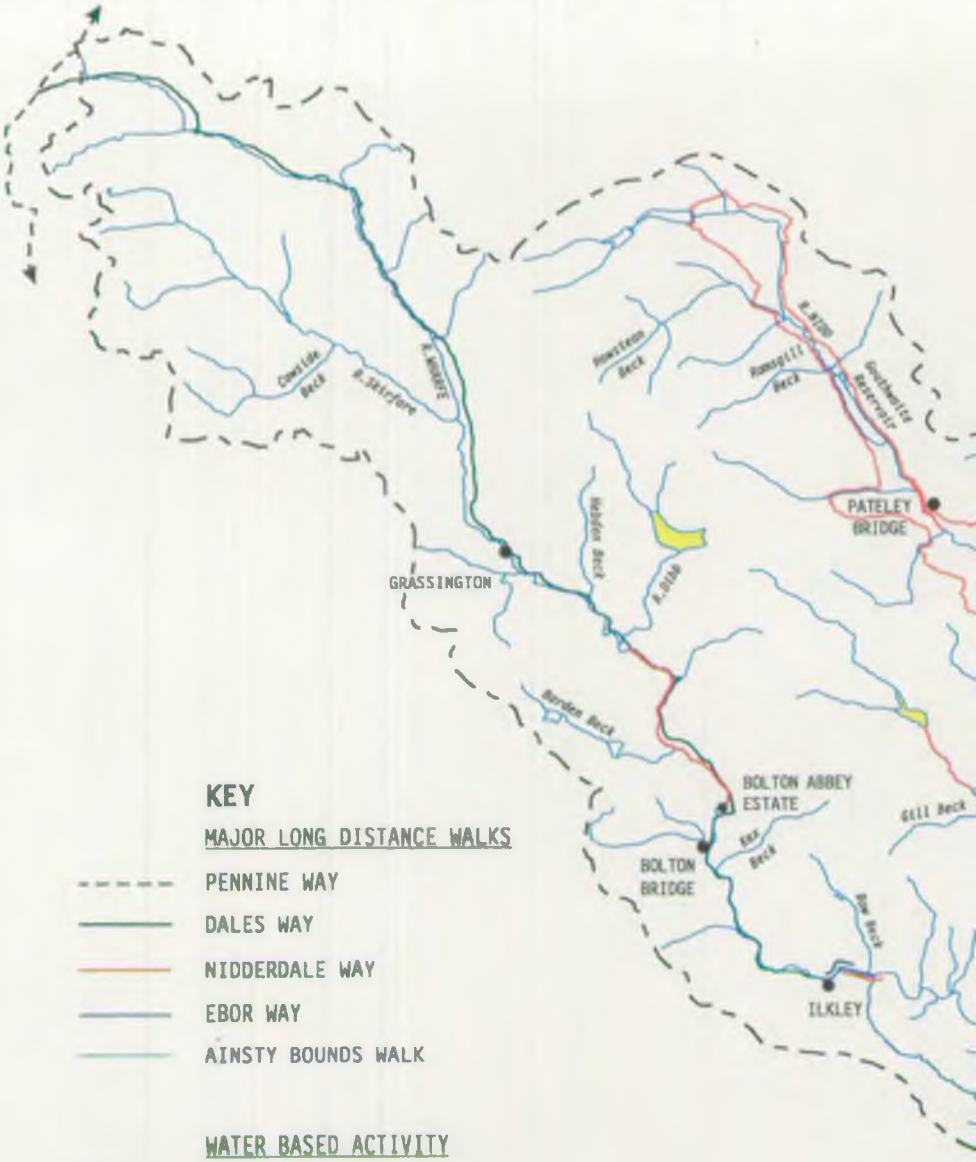
There is some potential to improve access for canoeists on both rivers without having an adverse impact on other riverside recreation. Most of the reservoirs controlled by YWS are open to public access, with picnic facilities, car parking and toilets. Grimwith and Thruscross in the Wharfe catchment also provide sailing facilities and Scargill Reservoir in the Nidd catchment provides facilities for model boating.

There is considerable ornithological interest in both catchments, with many of the reservoirs supporting wintering wildfowl. The remote headwaters of the River Nidd and the location of Scar House and Angram Reservoirs provide habitats for a number of species, particularly birds of prey. Records of golden eagle now come from upper Nidderdale annually, and the area is renowned for other less common species, such as peregrine falcons. Gouthwaite Reservoir is considered to be of prime ornithological importance. Designated a nature reserve by YWS in 1977, the site is managed in the interests of conservation with advice from an expert committee of naturalists. YWS do not issue permits for bird watching. The road between Pateley Bridge and Ramsgill runs close to the reservoir for its entire length on the western side affording excellent opportunities for bird watching.

Other activities include grouse shooting at several sites, especially on Hebden, Grassington and Barden Moor and on the Bolton Abbey estate. The limestone rocks to the west of Gouthwaite reservoir give rise to plenty of caving interest, in particular at Goyden Pot above Lofthouse and around How Stean Gorge on the River Nidd, while rock climbing takes place at Kilnsey Crag on the majority of weekends.

Tadcaster Weir is the tidal and navigational limit of the River Wharfe. The 9km stretch of the River Wharfe below Tadcaster Weir is an 'Open Navigation'. This means that there is no navigation authority responsible for the general control and monitoring of boating activities on this stretch of river. Due to the physical nature of the river, its width and depth, few boats are thought to use the navigation.

There is no recognised navigation on the River Nidd, although boats do occasionally stray in the mouth of the river from the River Ouse.




## KEY

MAJOR LONG DISTANCE WALKS

- PENNINE WAY
- DALES WAY
- NIDDERDALE WAY
- EBOR WAY
- AINSTY BOUNDS WALK

WATER BASED ACTIVITY

- CANOEING
- ROWING
- SAILING
- CATCHMENT BOUNDARY
- NAVIGABLE REACHES

# NIDD & WHARFE AREA
# RECREATION & AMENITY

NB:
Canoeing on waters above tidal limits is subject to individual agreements with adjacent land and fishery owners. The sites indicated are where agreements exist as of 1 April 1997. British Canoe Union Access Officers should be contacted well in advance of any proposed use of any piece of water.

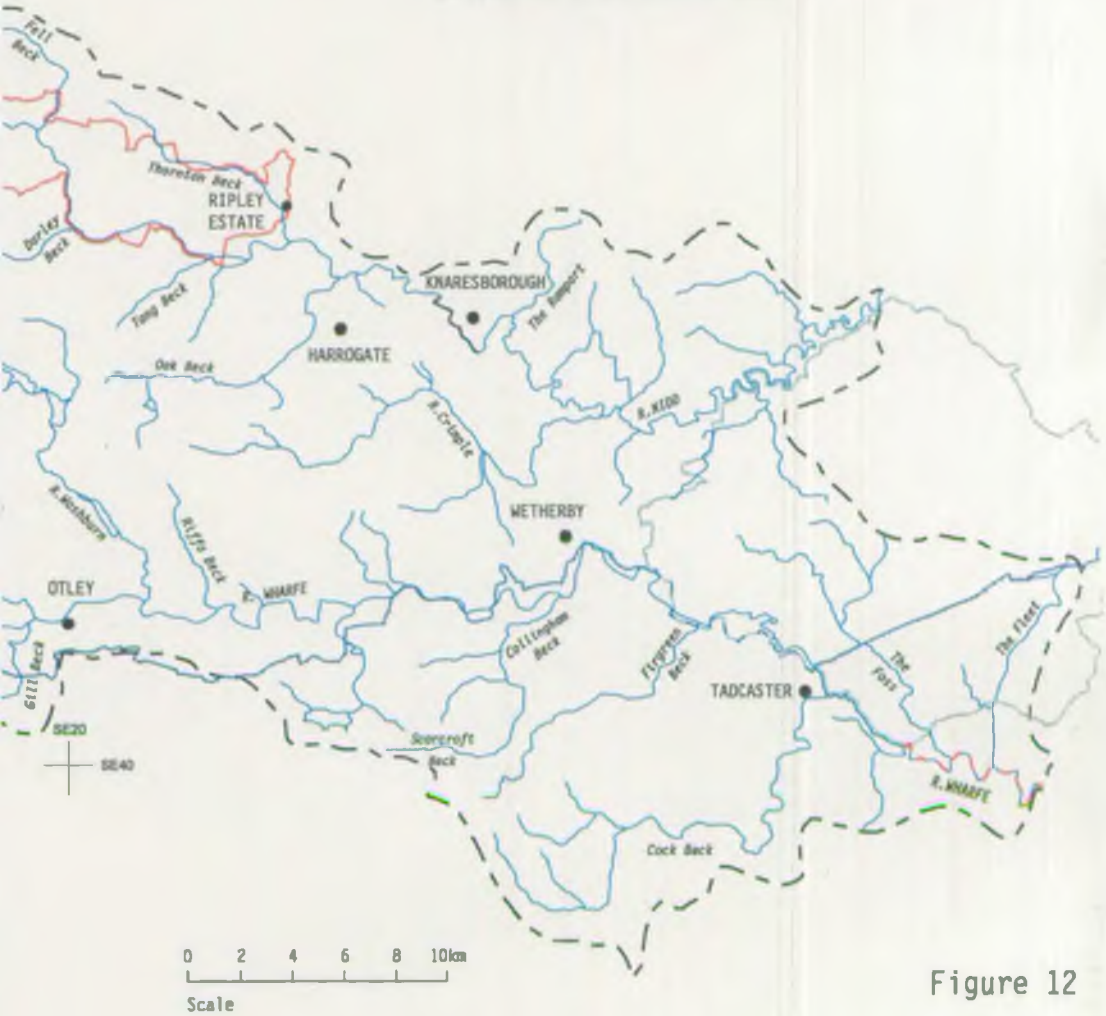



Figure 12

There are no known major initiatives to increase the level of recreational activity within the Plan area. However, it is the view of the canoeing organisations that access could be improved to both rivers without conflicting with the needs of other users.

The Agency will continue to promote suitable recreation on Agency owned riverside land where this will not have a detrimental impact on the other duties of the organisation. Wherever possible, provision will be made for people with disabilities. The Agency will continue to liaise with organisations and individuals interested in promoting recreation and amenity within the two river catchments.

### 5.5.2 ANGLING

**Background**

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

Fishing rights in non-tidal waters are often held by the riparian owner, although these rights may be leased or conveyed to another party, such as an angling club. In tidal waters and the sea, there is a public right of fishing, but access to the water may be controlled by the riparian owner.

Under the Salmon and Freshwater Fisheries Act 1975, all anglers fishing for salmon, trout, freshwater fish and eels in England and Wales must have a valid Agency rod licence, with this system being enforced by Agency bailiffs. Income from these licenses is put forward to fund fisheries projects i.e. habitat improvements.

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

Under the Water Resources Act 1991 the Agency has a duty to maintain, improve and develop fisheries under its jurisdiction. See 5.6.2 and Issues 13 & 22.

**Local Perspective**

Angling takes place throughout the length of both rivers from their confluence with the River Ouse to the upper reaches. The main areas are indicated on the map 12. Coarse, mixed and trout fishing are catered for, and the variety of angling available allows scope from the novice to the most experienced angler.

On the River Nidd upstream of How Stean Gorge, little angling is known to take place.


Cowside Beck
R.Skirfare
R.Wharfe
Howstean Beck
Hamplit Beck
R.Eccup
Gouthwaite Reservoir
GRASSINGTON
Hebden Beck
R.Dibb
PATELEY BRIDGE
Burnsall Beck
Gill Beck
Eea Beck
BOLTON BRIDGE
Bow Beck
ILKLEY

# NIDD & WHARFE AREA ANGLING ACTIVITY


Figure 13

Organised angling on the River Nidd begins downstream of Lofthouse, where large angling clubs from Leeds and Bradford allow fly and bait fishing as far downstream as Ramsgill. The clubs do not carry out any stocking in these reaches.

Between Gouthwaite Reservoir and the outskirts of Harrogate, locally-based angling clubs, with primary interest in fly-fishing for grayling and trout, control much of the fishing rights. Some day ticket fishing is also available, and restocking with brown trout is undertaken by local clubs.

The first major coarse fishing interest on the River Nidd occurs downstream of Killinghall, with coarse angling matches regularly hosted by Harrogate and Knaresborough angling clubs. Day ticket and free fishing is available in Knaresborough.

Downstream of Knaresborough, little serious trout angling takes place, although the fishing is still regarded as "mixed". From Knaresborough downstream to Walshford, most of the fishing is controlled by angling clubs based at Harrogate and Knaresborough. These areas are generally only lightly fished, though open matches are held occasionally around Goldsborough. Downstream of the A1, most of the fishing is controlled by clubs from Leeds, Bradford, Harrogate and York, although day ticket fishing is available in sections of the lower reaches from Tockwith to Nidd Mouth. Angling pressure in some parts of these lower reaches is heavy, with regular matches held in the summer months.

The majority of the fishing on the River Wharfe is controlled by angling clubs on a seasonal membership basis. However, many of these clubs also make day permits available to the general angling public. The Bolton Abbey Estate controls a considerable length of the middle reaches of the River Wharfe and provides fishing for trout and grayling on both season and day permits.

Match angling is concentrated in the lower reaches of the river between Otley and Ulleskelf. The lower river occasionally hosts some large events. However, this is not exclusively a match fishery, and a lot of individual fishing continues to take place.

Both catchments have a number of still water fisheries. YWS let the angling rights on Beaverdyke and Ten Acre Reservoirs in the Nidd catchment to a local club and operate the Washburn Valley reservoirs of Fewston and Swinsty as put-and-take fisheries. Disabled angling facilities are also provided on Swinsty Reservoir.

A wild brown trout fishery is run on Scar House Reservoir by the Nidderdale Angling Club, and a private fly-fishing syndicate controls the trout and grayling fishery on Gouthwaite Reservoir. The fishing rights at Lindley Wood Reservoir are reserved by Farnley Hall Estate, and the mixed fishing is let to a syndicate.

Smaller still waters within the two river catchments also include some excellent coarse fisheries, for example, the gravel pits at Knotford Nook near Otley, and at Knaresborough, offer quality coarse fishing.

Commercial fishing activities within the catchments are restricted to exploitation of eel stocks in the tidal reaches of the River Wharfe by fyke netsmen.

A large proportion of the fishing rights on the rivers Nidd and Wharfe is controlled by angling clubs with open membership and/or day ticket facilities hence, there is limited potential for further exploitation, and it is envisaged that the control of this resource will remain much as it is at present.

In view of the angling pressure on both rivers, brown trout and grayling stocks need to be carefully managed to ensure that the future quality of this type of fishing is maintained. Angling interest in grayling has recently increased. Following the perception that stocks had declined, measures aimed at conserving grayling stocks, including restrictions on harvesting, recording of catches and trial stockings have been instigated. The effects of such measures need to be evaluated.

The Agency will aim to work with the angling clubs on aspects of fishery management and in collaborative projects for improvement of the fishery habitat in the two rivers and their tributaries. It is also hoped that ways may be found to improve access and facilities for disabled anglers in both river catchments.

## 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: promote the conservation of flora and fauna which are dependent on an aquatic environment; 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; to 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, and is responsible 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 and the provision of advice on nature conservation.

There are many non-statutory bodies which also 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 and advising on many elements of land management for birds and other wildlife. The Farming and Wildlife Advisory Group, a non-statutory body with partial funding from the MAFF and DoE, provide guidance to farmers and landowners on the integration of wildlife conservation within farming practices.

Designations

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 habitats 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 for the Agency as a competent authority.

Sites of Special Scientific Interest (SSSIs) are designated by English Nature because of their ecological, physiographical or geological characteristics, and are protected by the Wildlife and Countryside Act (1981). A site which meets the criteria, as set out in the Habitats Directive, may be designated a Special Area for Conservation (SAC) whilst those which meet the criteria under the Wild Birds Directive may be designated SPAs (see section 2.5.2).

Environmentally Sensitive Areas (ESAs), designated by MAFF, are landscapes of a distinct topographical and/or landuse type holding much ecological interest, but where that interest 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 target areas.

In April 1997, there were changes to the ESA scheme in the Pennine Dales ESA with an increase in areas under the scheme and extra payment tiers. MAFF also fund 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. This scheme is targeted at a range of valued habitat and landscape types in the wider countryside, including a category of "Waterside Landscapes" (see 2.5.2 and 6.5.1).

There are also 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 conventions is the Rio Convention on Biological Diversity (1992), signed by the UK at the Rio Summit.

**Local Perspective**

The Nidd and Wharfe river catchments are both mainly rural areas with large conurbations in the lower reaches. The upper reaches of the River Wharfe lie within the Yorkshire Dales National Park and large proportions of upper Nidderdale and the Washburn valley fall within the Nidderdale Area of Outstanding Natural Beauty (AONB). The Yorkshire Dales National Park has successfully submitted a proposal for the Millennium Partnership for the Dales Project to the Millennium Commission. A substantial amount of financial assistance will be coordinated by the Millennium Trust to run a number of projects within the Dales. The Agency will be working in partnership with the trust and other organisations to take part in projects that will identify and counter environmental damage that has occurred in the Dales. The Nidderdale AONB Management Plan is being progressed by Harrogate Borough Council in consultation with interested parties. The Agency is working in partnership with these groups to develop and progress the plan.

Outside of these larger designated areas there are over 40 SSSIs, mainly in the Wharfe catchment, but 8 are in the Nidd catchment. A recent addition in Nidderdale is the newly designated East Nidderdale Moors SSSI. This site is also a proposed SPA. There are also a number of green sites which are important for a variety of reasons, including habitats supporting birds, grasses and flowering plant species. The Agency is responsible for taking the lead in the protection of 11 species, contact point for 12 species and the protection and contact point for Chalk River Habitat. Of these the following are present in the Nidd and Wharfe area:

| | |
|---|---|
| **Water vole** | *Arvicola terrestris* |
| **Otter** | *Lutra lutra* |
| **Great crested newt** | *Triturus cristatus* |
| **White clawed crayfish** | *Austropotamobius pallipes* |
| **Pea mussel** | *Pisidium tenuilineatum* (River Wharfe only) |

Both rivers support populations of native white-clawed crayfish (*A. pallipes*). However, the presence of the American signal crayfish (*Pacifastacus leniusculus*) in the River Wharfe gives cause for concern as they adversely affect the populations of native crayfish. Investigations are being carried out to discover the range and extent of the signal crayfish. So far they have been confirmed to be resident from Kilnsey to Grassington.

# NIDD & WHARFE AREA NATURE CONSERVATION


Figure 14

Otter populations are believed to be very small and fragmented in both catchments, work still needs to be done to try and establish more fully the extent of the populations and their limiting factors. The Agency is working towards this with the help of the Yorkshire Otters and Rivers Project and other organisations. The water vole is present on both catchments but again in limited numbers, further survey work needs to be carried out to establish the location of populations and habitat criteria. At present little is known about the size of populations of the pea mussel, the most recent confirmed record was at Grassington on the upper Wharfe.

The headwaters and moorlands are of particular interest for birds and are noted for breeding waterfowl in upper Nidderdale, wader populations, particularly dunlin and golden plover, and many rare passage species. The River Wharfe is an SSSI for 4.4 miles from Buckden to Kettlewell, with dipper and kingfisher frequenting the site and the nationally rare northern spiked rush *(Eleocharis austriaca)* favouring the wet hollows and meanders.

The upper reaches of the River Wharfe have, in the past, been protected from flooding and this has raised the issues of the influence of such work on erosion further downstream. The scale of the impact of these works on the conservation status and erosion of this area of the river is poorly understood at present. The Agency is undertaking a geomorphological audit above Kilnsey to assess what factors are predominant in the river geomorphology in this part of the catchment. Erosion control is a issue in both river catchments, and a multifunctional approach is required to address this issue. The use of Agency's advice emphasis the use of soft engineering techniques to combat erosion. (See MB1)

The drought caused low flows on the River Wharfe in 1996 and caused concern as to the possible additional affect of abstractions for public supply. A number of surveys and monitoring programmes were set up in 1996 to assess the influence of these factors on the river. The data will be analysed to produce various topic reports including identification of trends over time of changes in flora and fauna, and attempt to predict changes in the future.

Each catchment supports a diverse range of flora and fauna, sometimes recognised through designations of their habitats in order to give some degree of protection. Both catchments, particularly in the middle to lower reaches, are under pressure from housing and road development. Large tracts of land, as well as associated rivers and streams, are affected by these works including the large number of watercourse crossings required by YWS for improved pipeline services. It is essential to ensure that, where development takes place, suitable measures are put forward to protect, enhance and mitigate for conservation on the site affected.

A number of rivers and becks within the area are managed by Internal Drainage Boards.

In some cases the management of these watercourses could be improved for conservation without compromising the effective drainage regimes. The Agency works with most of the IDBs in order to assist the promotion of environmentally sensitive management practices. Water Level Management Plans are being produced for the River Fleet and Tadcaster Ings. An interim statement has been produced for the River Fleet (non SSSI) and an interim statement for Tadcaster Ings (non SSSI) will be produced in 1997.

Alder Root Disease

It is believed that the waterborne fungal disease, *Phytopthora,* is present on the River Nidd (not confirmed on the River Wharfe). This disease affects common alder (*Alnus glutinosa*) and other non-native alders. In parts of southern England 25-50% of alders have been affected. Once the disease is in the water of a particular area there is no way of removing it, and since it first attacks the roots, felling the affected trees is not an option for control.

Most of the River Nidd and a proportion of the River Wharfe are dominated by alder. The disease could have considerable impact on the landscape and ecology of the area. The Agency will continue to liaise with the Forestry Authority to determine what action can be taken to reduce the chances of the disease from spreading to unaffected parts of the area.

## 5.6.2 FISHERIES

### Background

The Agency has duties to maintain, improve and develop fisheries and further the conservation of fish species. Fish populations are affected by the quality and quantity of water as well as the availability of suitable physical habitat features. Fish populations provide useful information on the general health of the aquatic ecosystem because:

- they are biological indicators of the changes in river flow, habitat and water quality;
- they are exploited by commercial and recreational fisheries;
- they contribute to the diversity of the aquatic environment.

### Local Perspective

The distribution of fish species in the Nidd and Wharfe is illustrated in Figure 15. Fish populations in both rivers are 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.

The main concerns in the upper reaches of the River Nidd are the headwaters upstream of Angram reservoir and several of the tributaries further downstream. These

watercourses are virtually fishless due, it is thought, to acidic run off, coupled, in some cases, with problems arising from metals released from abandoned lead mines. (See MB1 above)

Downstream of Scar House Reservoir, the lack of a compensation flow from the reservoir results in very low flows with adverse effects on fish stocks, due both to loss of habitat and lack of dilution for effluents.

Gouthwaite Reservoir, noted for its grayling populations which migrate into the upper reaches of the River Nidd to spawn in spring, is used for river compensation releases. This has a strong moderating influence on flows throughout the entire length of the River Nidd which is felt to be beneficial to the fisheries. However, there is concern that the capacity for regulation is being lost due to siltation and that changes required in compensation releases may be damaging to river ecology.

The middle reaches of the River Nidd have good native brown trout stocks. Stocking and escapees from local trout farms pose a potential threat. It would be desirable to minimise this potential threat.

In the Harrogate area, the River Nidd fishery has suffered from intermittent water quality problems. Many of the River Nidd tributaries in the Harrogate area are affected by sewage pollution from CSOs and, in the case of Oak and Crimple becks, by Harrogate's two major sewage treatment works. Poor water quality in Crimple Beck not only affects the fishery in the beck itself but may also influence the fishery in the River Nidd downstream of its confluence.

Above Hunsingore Weir, there has been concern that angling catches in recent years have been relatively poor, particularly in late winter. The reasons for this change require investigation.

The physical habitat for fish in parts of the lowest reaches of the River Nidd is poor, with unproductive sand, hard clay substrates and little cover for fish. The fishery habitat in most of the lower Nidd tributaries is also relatively poor, due to a combination of low summer flows, variable water quality, unsympathetic dredging regimes, and obstructions to fish access and passage. Improvements are proposed as part of a collaborative scheme to improve the riparian and in-stream habitat for a wide range of flora and fauna on the lower Nidd.

There are numerous weirs on both the rivers Nidd and Wharfe which restrict fish movement, thereby preventing fish populations from developing to their full potential. Although this is generally undesirable, it may be welcomed where the restricted fish are not favoured, for example, by fishery owners. Problems of fish passage and possible solutions will therefore be examined, but detailed consultation will occur before implementation.


Cowside Beck
R.Skirfare
R.WHARFE
Howstean Beck
Ammgill Beck
R.WIDD
Gouthwaite Reservoir
GRASSINGTON
Hebden Beck
R.DIBB
PATELEY BRIDGE
Barden Beck
Gill Beck
Ess Beck
BOLTON BRIDGE
Bow Beck
ILKLEY

# NIDD & WHARFE AREA
# DISTRIBUTION OF FISH SPECIES


Figure 15

Skip Bridge Gauging Weir causes a problem for coarse fish migrations from the River Ouse and appears to have affected the populations of smaller coarse fish species in the reach below Kirk Hammerton.

Ways of improving fish passage without severe restriction of low flow gauging requirements are being examined. Grimwith Reservoir has been stocked with a strain of Arctic char from Windermere as a conservation measure and their progress needs to be monitored and managed.

Significant populations of brown trout occur in the River Wharfe upstream of Wetherby and in most of the tributaries. Many natural recruits are derived from spawning in the tributaries, thus it is important to maintain flows and water quality in these streams as well as the main river, and access for spawners is also important. Trout stocks in some streams are adversely affected by low flows, either resulting from abstraction or a lack of compensation flow requirements from reservoirs or natural phenomena, such as sink holes.

In recent years, reports of declines of grayling in certain stretches of the River Wharfe have been received, but the evidence is generally scant and the possible causes remain conjectural. Measures may need to be taken to remove adverse factors so as to permit the recovery of stocks. Some stocking trials are currently being evaluated.

Recovery of salmon stocks in the rivers Nidd and Wharfe is probably largely hindered by poor water quality in the tidal River Ouse and the lack of fish passes at some weirs. Natural recovery will probably occur as water quality is improved, but needs to be monitored. Funding restrictions mean that active restoration is of a lower priority than the maintenance of existing runs on recognised salmon rivers elsewhere in the North East Region.

Coarse fish appear to be spreading upstream in the River Wharfe and may be affecting trout and grayling stocks. Pike, which were formerly restricted to below Harewood, are now reported in increasing numbers up to Otley, but their effects on other fish stocks remain to be established. The question of control of fish predators requires careful consideration of a variety of issues before actions are taken.

Habitat for fish could be improved in a number of stretches of the lower Wharfe, and funds are being sought from various sources for such work. Problems of poor angling catches have been identified above Harewood Weir and at Boston Spa, possible causes and remedial measures are being investigated.

It is desirable that management of brown trout populations on both rivers should move towards the development of self sustaining stocks. Concomitantly, angling management for brown trout should move away from 'put-and-take' and towards 'catch-and-release'.

Together these measures should reduce the requirement for stocking which is known to have adverse effects on wild stocks.

The drought of 1995/1996 had marked effects on both flows in the River Wharfe and levels in the reservoirs. Large quantities of water were abstracted from the river and reservoirs for potable supply, causing concern for the fate of fish entrained in the abstracted flows, and for the effects on remaining fish caused by changes in water quality and restriction of habitat. Changes in fish stocks may not become apparent until some time after the drought has ended and then the requirement for remedial measures, such as restocking, will need to be evaluated. See 5.6.2 & 6.4.

There is a general perception that the importance of dace in the Wharfe and Nidd fisheries has declined significantly since the 1970's. This reflects trends observed in other river systems and may be linked to climatic influences, but investigations are required to determine the extent of changes and likely causes.

Road improvements can have adverse effects on fisheries. A fish haven was built as part of the mitigation measures for the Harrogate Bypass. A fish haven is also planned as part of the mitigation measures on the River Nidd in response to the A1 widening. The effectiveness of these measures will need to be evaluated. See Issue 15.

### 5.6.3 ARCHAEOLOGY AND HERITAGE

**Background**

The landscape of Britain contains a rich heritage of historic and archaeological features. These can include megalithic monuments, 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 Agency has a duty to have regard to features of archaeological interest during all aspects of its work under the Water Resources Act 1991.

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 Scheme agreement, formerly with the Countryside Commission, now MAFF. 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). See 2.5.3.

**Local Perspective**

Archaeology is of considerable importance in the Nidd and Wharfe area and the number of SAMs is likely to increase in the area considerably as the local authorities continue to review their sites.

There have been archaeological finds in the Yorkshire Dales dating back to the Mesolithic period, and farming tools from the Neolithic and Bronze Ages have been found extensively in Nidderdale. Upper Wharfedale is rich in archaeological remains, such as burial mounds, and there is much evidence of Iron Age settlements.

There are 119 Scheduled Ancient Monuments (SAMs) within the two catchments, the River Wharfe has 95 and the River Nidd 24. Both catchments contain numerous grade 1 and 2 listed buildings and several designated conservation areas.

Several of the bridges within the River Nidd catchment are designated SAMs including Pateley Bridge, Hampsthwaite and Cattal bridges. Similarly on the River Wharfe, bridges have been designated in Barden, Ilkley and Otley. Other SAMs include Roman remains, deserted villages, ecclesiastical buildings and structures, such as halls and castles.

The River Wharfe catchment contains a variety of Roman remains such as auxiliary forts, marching camps, roads, villas and settlements. It was during the Roman occupation that the lead deposits in upper Nidderdale began to be exploited.

A number of important battles were fought within the catchment. The battle of Towton fought in the fields adjacent to Cock Beck in 1461 saw a crushing defeat for the House of Lancaster. It is believed that they became bogged down in waterlogged land adjacent to the stream. In 1642 there was a battle for Tadcaster Bridge and 1644 saw the battle of Marston Moor between the Parliamentary and Royalist forces north of the village of Long Marston.

Bolton Abbey and Barden Tower are well known features of Wharfedale. The abbey was established in 1155 by Augustinian monks. Barden Tower was constructed in the 15th century and rebuilt in 1657. Although ruined, it has been partially restored and offers accommodation in the form of a bunk house barn.

# NIDD & WHARFE AREA
# ARCHAEOLOGY AND HERITAGE

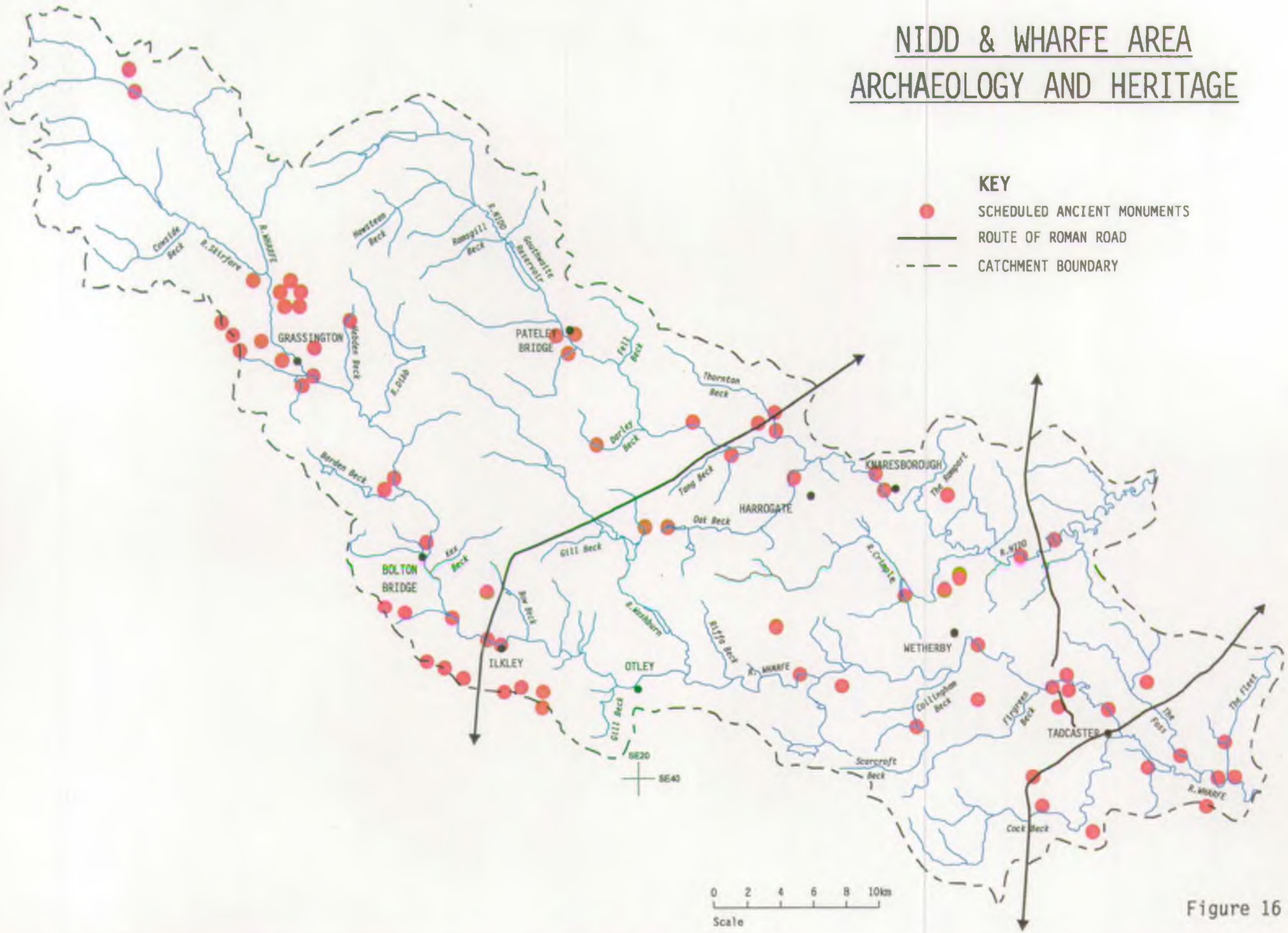



Figure 16

There are several weirs on the rivers Wharfe and Nidd. Some, such as Pool and Otley, continue to support the needs of industry for water. Others, such as Addingham, Boston Spa, Wetherby and Burley-in-Wharfedale on the River Wharfe, and Glasshouses, Low Laithes and Hunsingore on the River Nidd, remain even though the heavy industry has gone.

Mineral springs and the 19th century fashion for 'taking the waters' led to the popularity of Harrogate and, to a lesser extent, Boston Spa as resorts.

All county councils in the area maintain a detailed list of known archæological sites, the Sites and Monuments Record, 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 Record as the primary source of archæological information and advice, and will consult them as a matter of course regarding such data.

Page Number

## 6.1 INTRODUCTION

Section 6 examines the local environment by measuring its current status against accepted environmental targets where available, and can be used to support the proposals for action in Part 1, Section 4.

## 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 by the Nidd and Wharfe Plan is predominantly rural and agricultural in nature, with a concentration of large coal burning power stations close to the south eastern boundary. In much of the area the predominant air quality influences are from "domestic" sources eg domestic fuel burning, road traffic etc. In addition to this, there is some impact from agriculture and the smaller industrial processes which are regulated by local authorities. The industrial processes regulated by IPC will not have a significant effect on air quality outside a very localised area.

Air quality is monitored by the local authority. There are no national air quality monitoring stations in this area. See 5.1.2 and Issue 17, 18.

**Current Status**

The following paragraphs describe the pollutants 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 pollutants described in this section are currently monitored in the area.

Ozone

Ozone is commonly known as the "sunshine pollutant", as it is formed as a result of the reaction in sunlight between oxides of nitrogen (NOx), hydrocarbons, and oxygen. 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, the level of ozone is a good indicator of photochemical pollution in general.

Ozone concentrations tend to increase during 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 also causes extensive damage to foliage, especially crops and forests.

World Health Organisation (WHO) air quality guidelines recommend that eight hourly concentrations should be below 60 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) have recommended a limit of 50 ppb measured as an eight hour running average. This is the proposed draft National Air Quality Strategy Standard.

Within the Nidd and Wharfe Plan area there are no urban or rural area ozone monitoring stations. The nearest continuous ozone monitoring station is at High Muffles (North Yorkshire Moors) and this station forms part of the national network of air quality monitoring stations. Information from this station can be found in the National Directory of Air Quality Data (ISBN 0 86180 317 5).

Nitrogen Dioxide ($NO_2$) and Nitrogen Oxides ($NO_x$)

Oxides of nitrogen (NOx) are formed by a reaction between nitrogen and oxygen during combustion processes. The main sources of NOx are power stations, vehicular emissions and industry. The gases are initially released as nitric oxide (NO) which is converted to the more toxic nitrogen dioxide ($NO_2$) the presence of sunlight. This may create a photochemical smog. Nitrogen dioxide is an irritant, with similar short term health effects as ozone. Little is known about the long term health effects of exposure. Oxides of nitrogen can affect plant growth, contribute to acid rain and exacerbate tropospheric ozone levels, they 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 of NOx in England and Wales in 1990 were estimated at 2.7 million tonnes, an increase in 0.5 million tonnes per year from 1985 emission information. This increase has been attributed to the increase in vehicular emissions and the latter source now accounts for nominally 60% of the total UK emissions. Polluting emissions from power stations have declined substantially following the introduction of cleaner technologies.

EC Directive 85/203 sets limits of $NO_2$ at 200 $\mu g/m^3$ or 97.5 ppb (98 percentile of hourly averages) to protect human health. The WHO hourly guideline concentration is 110 ppb, with the daily guideline is 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 for $NO_2$ are 104.6ppb (hourly mean) and 20ppb (annual mean). There are no automatic $NO_2$ monitoring stations in the Nidd and Wharfe area. The City of Bradford Metropolitan Council monitors for $NO_2$ by means of diffusion tubes in Ilkley. This monitoring has shown no breaches of the air quality standard.

Volatile Organic Compounds (VOC)

Volatile Organic Compounds (VOC) 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 species 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 annual average concentrations of 5ppb and 1 ppb respectively present small risks to health. These levels are proposed in the draft National Air Quality Strategy as standards.

In the UK, 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 result in a decrease in 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.

Monitoring for VOCs is currently not performed within the Nidd and Wharfe area.

Sulphur Dioxide ($SO_2$) and Smoke

Sulphur dioxide ($SO_2$) is an irritant to both 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 considerable damage to trees, crops and buildings. The major source of $SO_2$ 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 $SO_2$, with oil burning processes and vehicles also contributing to the emissions.

The largest proportion of $SO_2$ comes from coal burned at power stations for electricity generation. However, it should be noted that national $SO_2$ 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 total $SO_2$ emissions.

The reduction in $SO_2$ 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; the reduction in the number of households receiving free or subsidised coal.

Average levels of $SO_2$ 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 $SO_2$ limit of 100 ppb for a 15 minute period. The EC has set a daily limit of 80 ppb and an annual average of 45 ppb (dependant on associated smoke level). The EPAQS limit has been proposed in the National Air Quality Strategy draft document.

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.

The EC guide values (1982) for smoke particles are linked with sulphur dioxide levels. The lowest smoke particle level considered is 80 $\mu g/m^3$ as an annual average. WHO guidelines for black smoke are 50 $\mu g/m^3$ as an annual average and 125 $\mu g/m^3$ as a 24 hour average. Monitoring for sulphur dioxide is currently not performed within the Nidd and Wharfe area.

Acid Deposition

Acid deposition is caused by airborne pollutants such as $SO_2$ and NOx which readily dissolve in rain water forming weak sulphuric and nitric acid. The resultant rain water will be acidic, with a pH value of less than four. 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 $SO_2$ 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 $SO_2$ 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 introduced 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 before 2005 as a result of to air pollution. 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 runoff waters, and can have profound effects upon soils. Metals such as aluminium may be leached together with many nutrients, from soils into water courses and ultimately find their way into drinking water supplies. This process can cause many problems for long term soil quality. (See Issue 20).

Monitoring for acid deposition is currently not performed within the Nidd and Wharfe area.

Lead

Lead has major adverse health effects, particularly on children. The National Society on 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 increasingly 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). Lead levels at these sites have followed the national trend, dropping considerably over the last decade. However, slight increases in lead levels have occurred in recent years owing to the saturation of the unleaded petrol market and 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 $0.5\mu g/m^3$ is proposed within the draft National Air Quality Strategy.

Monitoring for lead is currently not performed within the Nidd and Wharfe area.

Particulates

Sources of particulate air pollution can be both man-made or biological. Major sources of man made dusts include fuel combustion, domestic fires, road dust, photochemical aerosol, $NO_2$ and organic gases. Dusts of a biological origin are derived from plant fragments, wind blown soil particles and can also result from sea spray and vegetation derived terpenes.

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 particulates of below 10 $\mu m$ diameter (PM10) can result in adverse health effects.

EPAQS have proposed a PM10 limit of 50 $\mu g/m^3$ as a 24 hour rolling average. This is proposed in the draft National Air Quality Strategy (see Issues 17, 18).

Monitoring for particulates is currently not performed within the Nidd and Wharfe area.

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 both

prescribed substances and 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 existing data should raise awareness of local air quality. See 5.1.2.

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 Nidd and Wharfe Plan area requires assessing (see Appendix C) & Issue 19.

## 6.3 WASTE

### 6.3.1 WASTE MANAGEMENT

**Background**

Under the terms of the Environmental Protection Act (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 maintains 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 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 with regard to waste and has set targets for its recovery. Below is a summary of the current situation. See 5.2.

**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 five local authorities in the area collected less than 100,000 tonnes of household waste and recycled less than 5% of this.

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. Compact city councils can easily achieve 10% recycling, whereas sparsely populated rural areas find it difficult to achieve even lower levels of recycling, so alternative approaches to managing household waste arisings are more suitable. This is reflected in the catchment where Selby, for example is trying to encourage householders to compost their green wastes; this explains why Selby's figure for the amount of waste recycled is relatively low at just over 2%. Waste recycled by householders at the point of production, i.e. their homes, is never weighed by the local authority and tends not to be included in the figures for recycled wastes. Craven District Council has a large network of mini-recycling sites in smaller villages throughout its area. Harrogate has a mixture of larger recycling sites for use by the public and is trying to encourage home composting. Leeds MBC has a mixture of kerbside collection schemes and recycling sites: over 5% of Leeds' waste is recycled. Bradford operates a number of 'bring' schemes.

Industrial and Commercial Waste

Industrial and commercial waste in the Plan area is estimated to be relatively low and its composition is probably changing as a result of the decline in traditional manufacturing industries 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 quite low. In total, less than 0.5 million tonnes of industrial and commercial waste is disposed of within the catchment and this is entirely made up of relatively inert wastes from the construction industries. In many cases, this material is suitable for re-use in various processes, often being crushed and screened with the intention that it will be used as a secondary aggregate. Construction waste is a priority waste stream and may be subject to regulations similar to those shortly to affect the packaging industry.

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. No special wastes are disposed of within the area although a transfer facility can be found in the LEAP 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 ½ mile, or within 2 miles where the recycling facility is located with other frequently used facilities.

There are almost 100 recycling sites in the area. The Council of Craven has made excellent provision 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 8% - very high for a rural area.

Recent experimental trials of home composting in 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.

From the middle of this year, a business with an annual turnover of greater than £5 million and producing more than 50 tonnes of packaging waste a year have obligations to recycle and recover a proportion of this waste. The number of businesses in the area to which these regulations will apply is expected to be small.

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 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);
- 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 to an incineration facility.

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. It will remain the predominant waste disposal route for many years.

## 6.4 WATER

### 6.4.1 WATER RESOURCES

**Background**

Groundwater and surface water together combine to make up the water resource of the area. This resource must be protected in terms of quality and quantity by achieving a balance between the rights of abstractors, other lawful users of the water, development and the needs of the environment.

The Agency has a duty under the Water Resources Act 1991 to conserve, redistribute, augment and ensure proper use of water resources, whilst at the same time conserving and enhancing the environment. In order to achieve this, the Agency will continue to ensure effective management of the resource by the development and implementation of Regional Water Resources strategies and the implementation of Licensing Policy.

The Agency proposes to review its existing policy for the determination of groundwater and has adopted a new policy for the determination of surface water abstraction licenses. The revised and new methodologies will ensure that applications are determined in a consistent and even-handed manner and that due regard is given to the needs of the environment as well as the rights of existing lawful users.

In 1994, following both a report by consultants "Water Resource Development Options For Yorkshire", (Halcrow, 1993), and public consultation, the North East 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 forecasting 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, and 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. As a result of the drought, it has been identified that an update to the 1994 Water Resources Strategy is required. Following AMP3, 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 climate change/cost benefit.

The Agency seeks to ensure the protection of groundwater resources by the definition of ground water protection zones and the implementation of these in conjunction with the Agency's "Policy and Practice for the Protection of Groundwater". See 5.3.

**Current Status**

Flows in the River Nidd are significantly influenced by the three large reservoirs in the headwaters: Scar House and Angram reservoirs supply water to Bradford; Gouthwaite Reservoir is a compensation reservoir, built to offset the effect on summer river flows of the supply reservoirs.

Gouthwaite Reservoir is operated by YWS, following rules laid down by the Gouthwaite Board of Management. The Agency advise the Gouthwaite Board on the optimum use of the reservoir. The water released from Gouthwaite is the most significant fraction of the river flow as far downstream as the Agency's river gauging station at Birstwith. Below Birstwith, the contribution to flow of tributary streams and effluent discharges become prominent.

Modifications to the operating rules at Gouthwaite have resulted in less water being released down the river during the early summer, so that more water is available for release in August and September when the tributary streams are running drier. As a result, oxygenation equipment to inject oxygen into the river downstream of Harrogate STW was not required during 1995.

Upstream of its confluence with the River Dibb, flows in the River Wharfe are not significantly affected by artificial influences such as reservoirs, abstractions or effluent

discharges. During times of low flow elsewhere in the catchment, flows between Grimwith Reservoir (River Dibb) and the River Wharfe at Addingham are artificially high due to water being released from Grimwith to support the YWS river ('put and take') abstraction regime at Lobwood, The Hollins and Arthington.

Between Ilkley and Wetherby, the heavily reservoired River Washburn is the largest tributary to join the River Wharfe. Compensation water is released from Lindley Wood Reservoir, the lowest of the four reservoirs in the Washburn Valley.

YWS operate a river abstraction point on the River Wharfe at Arthington, downstream of the Washburn confluence.

The Agency operates an extensive hydrometric network, including river level and flow gauging stations, automatic and manually read raingauges and climate monitoring stations. River flows are measured at five gauging stations in the Wharfe catchment and six gauging stations in the Nidd catchment. Data are recorded at fifteen minute intervals on electronic logging devices. The Regional Telemetry System allows the Agency to have up to the minute information available without the need for staff to be on site. Monthly site visits ensure that the stations are recording correctly and allow a backup set of data to be collected and returned to the office.

The majority of raingauges for which the Agency receives data are manually read by rainfall observers. Where raingauges are located at reservoirs or water treatment works, the observers are employees of YWS. There are also a large number of 'private' observers, members of the public, who daily read an Agency raingauge, often located in their garden. The Agency is grateful for the important service that all rainfall observers undertake. All rainfall data are forwarded to the Meterological Office, who maintain the national rainfall archives.

Groundwater

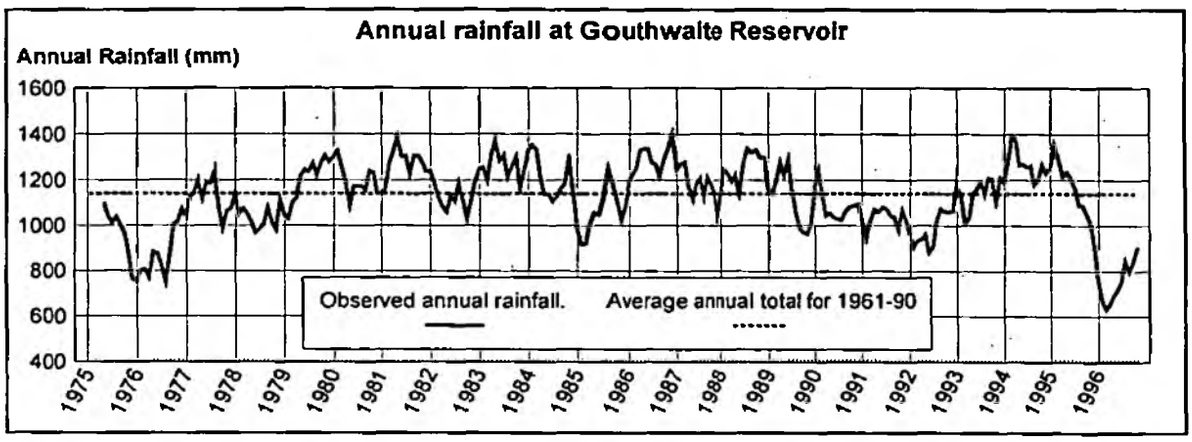
The Agency operates a network of groundwater level observation boreholes across its major aquifers. Data is collected via a combination of automatic data loggers and manual readings. In general it is rainfall which effectively recharges aquifers. During the summer, evaporation and high soil moisture deficits mean that there is little water available for infiltration into the water table.

During 1996, minimum groundwater levels in the Plan area were lower than those of 1995 as a result of the low winter rainfall in 1995-1996. However, water levels were generally higher than all time minimums which were recorded in 1976 and 1992. The Agency will be monitoring the situation closely in 1997.

Drought 1995-6

When compared to average rainfall totals, the Plan area was the most drought affected part of the North East Region during the summer of 1995 and the following winter. Table 5 shows the month on month annual rainfall, recorded at Gouthwaite Reservoir, for the last 24 years. The driest year in the period of record was from April 1995 to March 1996 when only 634mm fell, 56% of the 1961-90 average.

**Table 5 : Annual Rainfall at Gouthwaite Reservoir**




The first three months of 1995 were wetter than average. However, that did little to offset the effects of the drought later in the year as, once the reservoirs, were full the extra water ran to waste down the rivers. By the end of 1995, reservoirs were at record low levels. The dry winter of 1995/6 meant that many reservoirs did not fill by April 1996, exacerbating the effect on supplies of the fairly dry summer of 1996.

Drought orders were made on the River Wharfe to alter the release policy from Grimwith and the abstraction regimes at Lobwood and Arthington. As a condition of the drought orders, mitigational conditions were imposed which included environmental monitoring. Time limited abstraction licence increases, with a lifespan of three years, have also been granted on the River Wharfe. A three year joint programme of monitoring by the Agency and YWS has been agreed in relation to the time limited licences.

Above average rainfall in late 1996 refilled reservoirs to normal levels for the time of year. Water levels in aquifers take longer to recover from drought and recovery will not become evident until later in 1997, if above average rainfall continues.

## 6.4.2 WATER QUALITY

### Background

Surface Water

Rivers and tributaries in the Nidd and Wharfe area 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) (see Appendix B);
- compliance with EC Directives (see Appendix C);
- North Sea Reduction Programme (see Appendix C);
- 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 20.

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, which address the chemical quality requirements of different types of aquatic ecosystems, were introduced by the Surface Waters (River Ecosystem)(Classification) Regulations 1994 (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 set are both long term and short term. Short term targets are realistic targets to be achieved by 2005 and long term targets are achievable aspirational targets which 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.

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, if not impossible, to rehabilitate, and the cost of rehabilitation is always very high. 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 Water Quality Objectives 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 are 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, Millstone Grit 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. See 5.3.2.

**Current Status**

Surface water

The Nidd and Wharfe area is predominantly rural with a number of market towns and small villages. The area is mainly devoted to agriculture with a few, relatively, small industrial estates and factories.


Cowside Beck
R.Skirfare
R.WHARFE
Howstean Beck
Ammyhill Beck
R.WEED
Gouthwaite Reservoir
GRASSINGTON
Hebden Beck
R.Dibb
PATELEY BRIDGE
Burden Beck
Gill Beck
Kex Beck
BOLTON BRIDGE
Ibe Beck
ILKLEY

# NIDD & WHARFE AREA
# GOA GRADES - 1995

**KEY**

- CLASS 1A - VERY GOOD
- CLASS 1B - GOOD
- CLASS 2 - FAIR
- CLASS 3 - POOR
- CLASS 4 - BAD
- CATCHMENT BOUNDARY

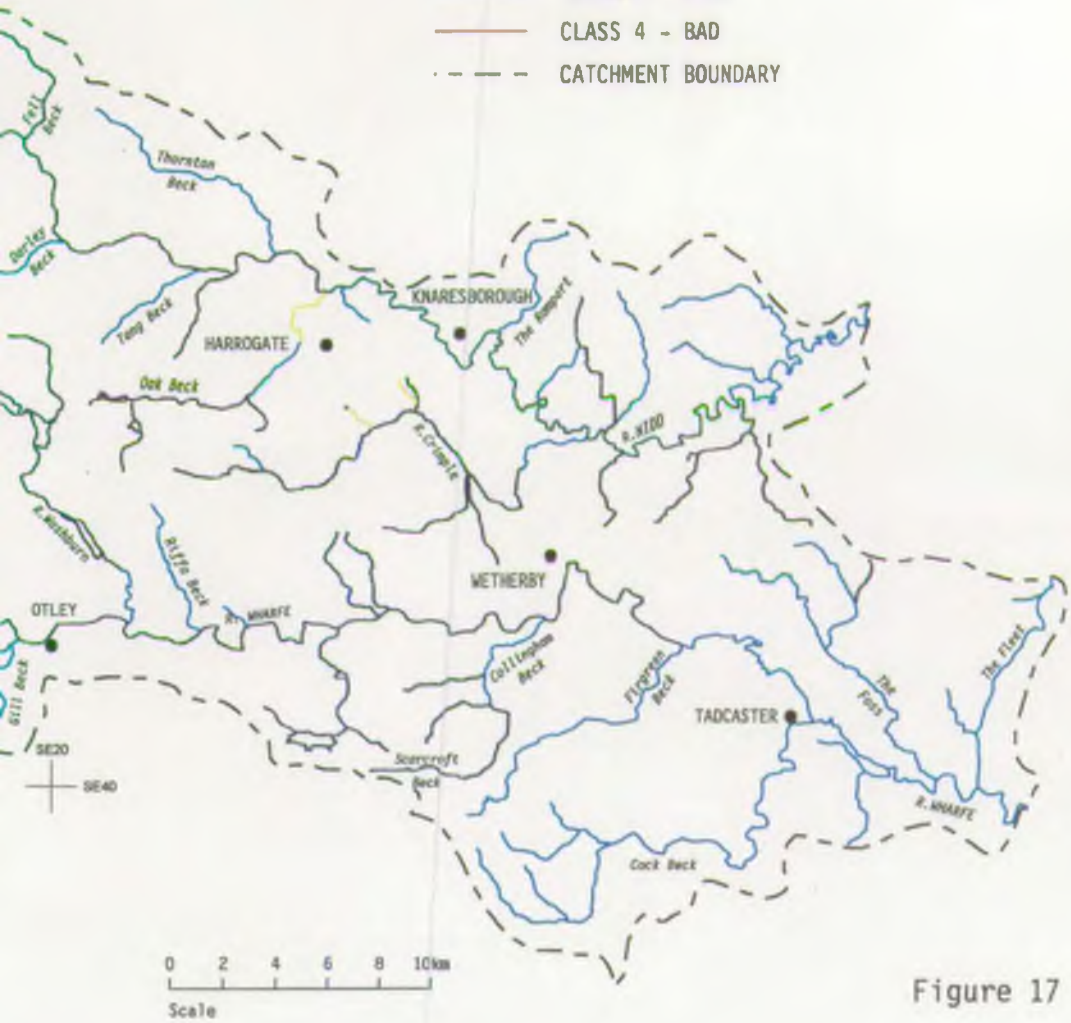



Figure 17


## KEY

CATCHMENT BOUNDARY

RIVER

COMPLIANCE WITH RIVER ECOSYSTEM TARGETS (SHORT TERM)

MEETS OBJECTIVE

MARGINALLY FAILS TO MEET OBJECTIVE

SIGNIFICANTLY FAILS TO MEET OBJECTIVE

NO TARGETS SET

# NIDD & WHARFE AREA
# SHORT TERM
# RIVER QUALITY OBJECTIVES

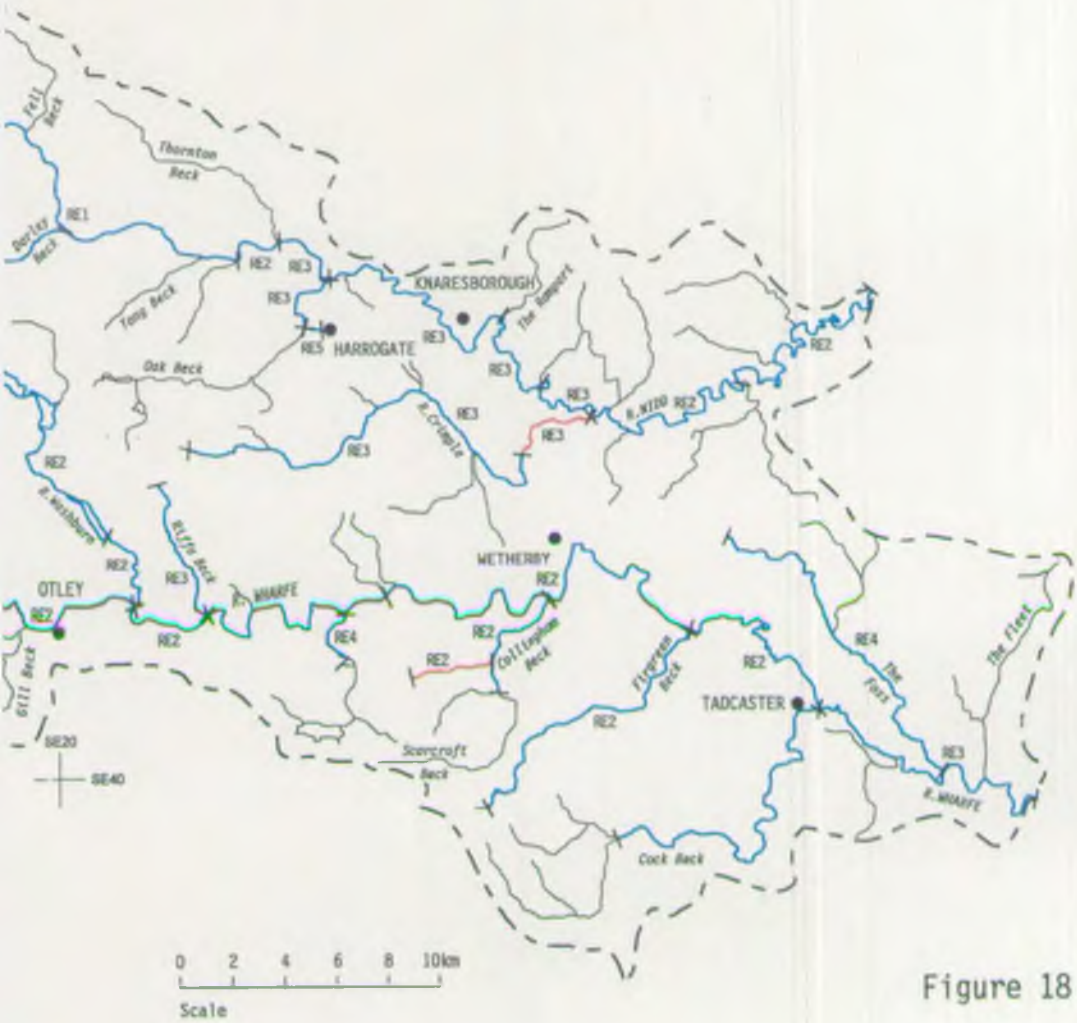



Figure 18


## KEY

CATCHMENT BOUNDARY

RIVER

COMPLIANCE WITH RIVER ECOSYSTEM TARGETS (LONG TERM)

MEETS OBJECTIVE

MARGINALLY FAILS TO MEET OBJECTIVE

SIGNIFICANTLY FAILS TO MEET OBJECTIVE

NO TARGETS SET

# NIDD & WHARFE AREA
# LONG TERM
# RIVER QUALITY OBJECTIVES

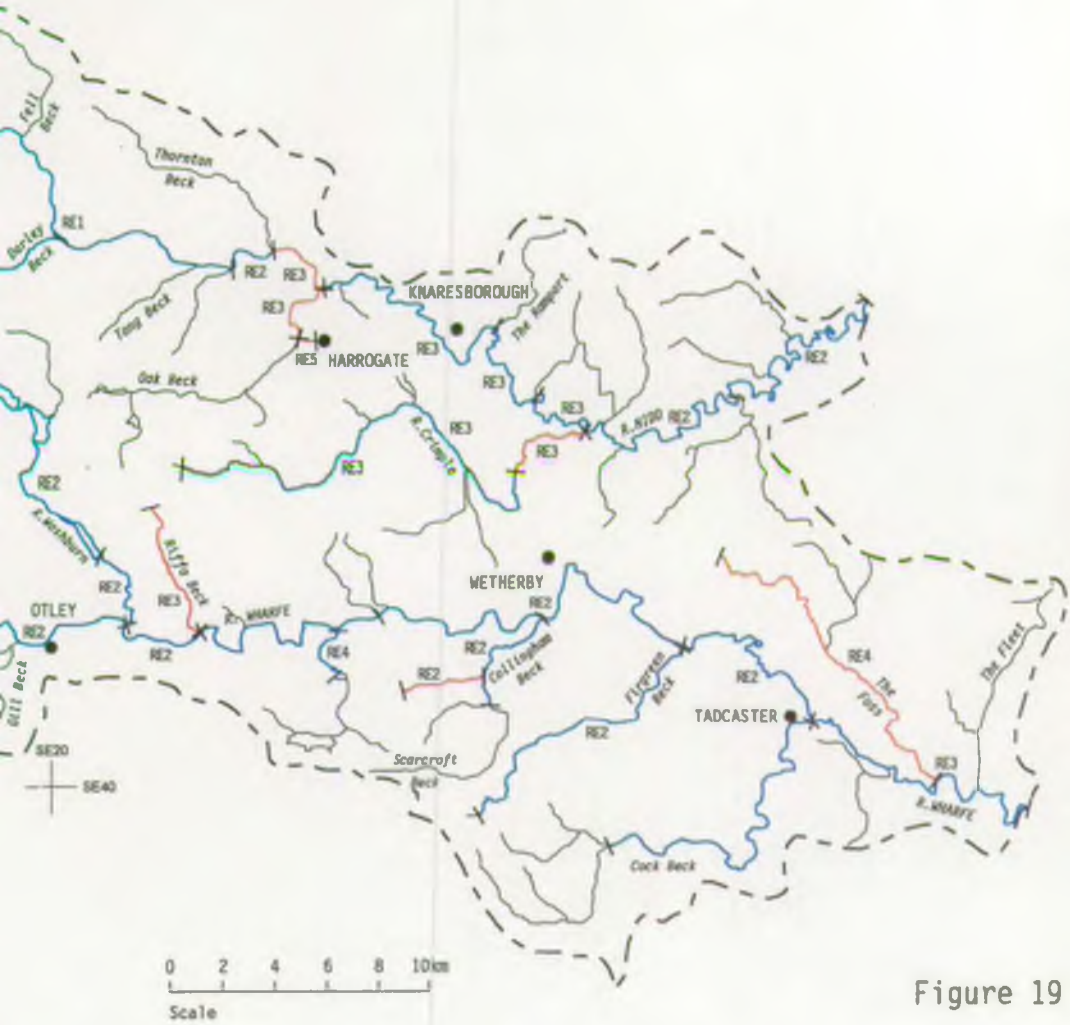
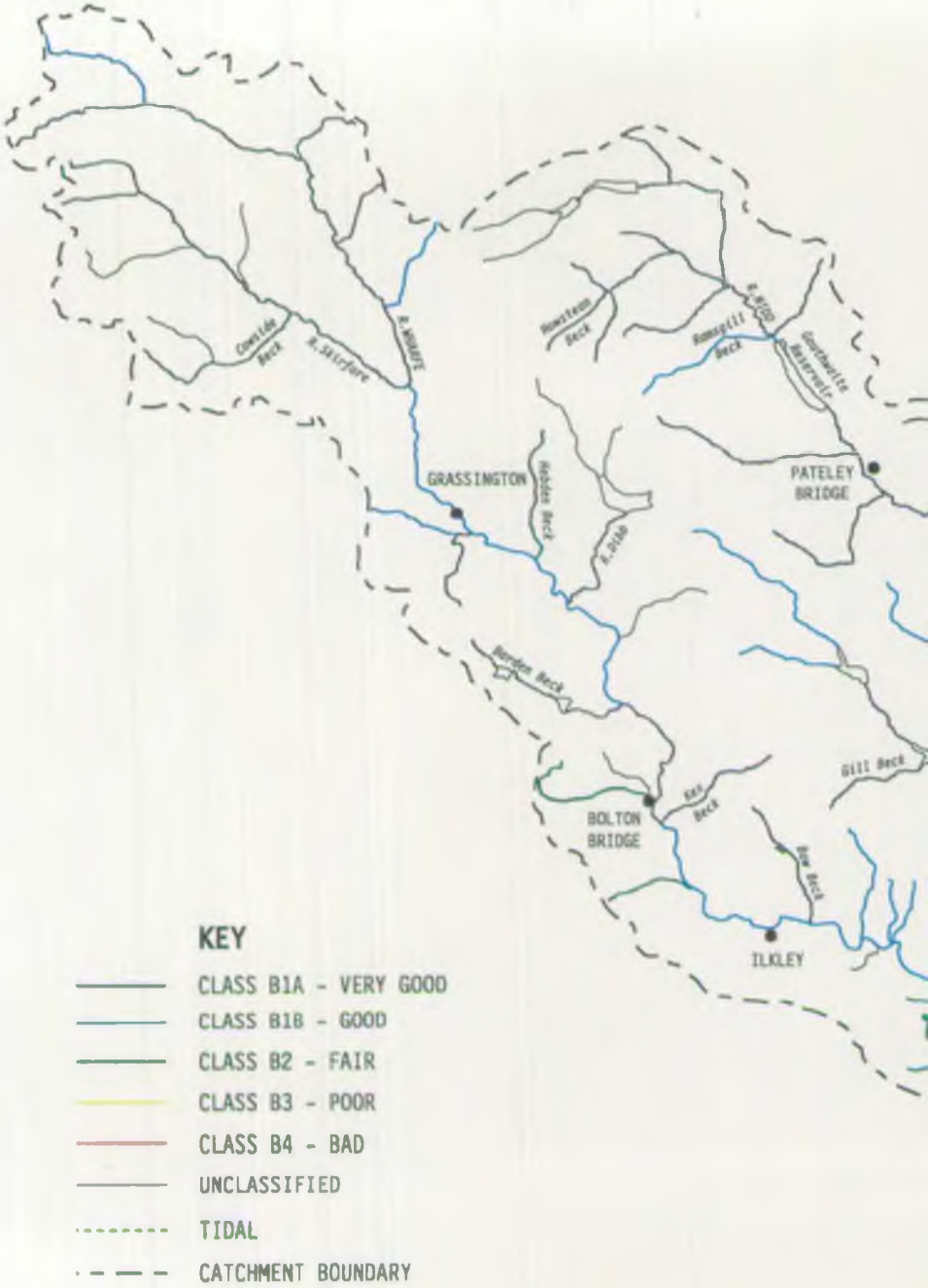



Figure 19


Cowside Beck
R.Skirfare
R.WHARFE
Howstean Beck
Ramsgill Beck
R.NIDD
Gouthwaite Reservoir
GRASSINGTON
Hebden Beck
R.Dibb
PATELEY BRIDGE
Burnsall Beck
Gill Beck
Eea Beck
BOLTON BRIDGE
Bow Beck
ILKLEY
KEY
CLASS B1A - VERY GOOD
CLASS B1B - GOOD
CLASS B2 - FAIR
CLASS B3 - POOR
CLASS B4 - BAD
UNCLASSIFIED
TIDAL
CATCHMENT BOUNDARY

# NIDD & WHARFE AREA
# BIOLOGICAL WATER QUALITY 1992-95

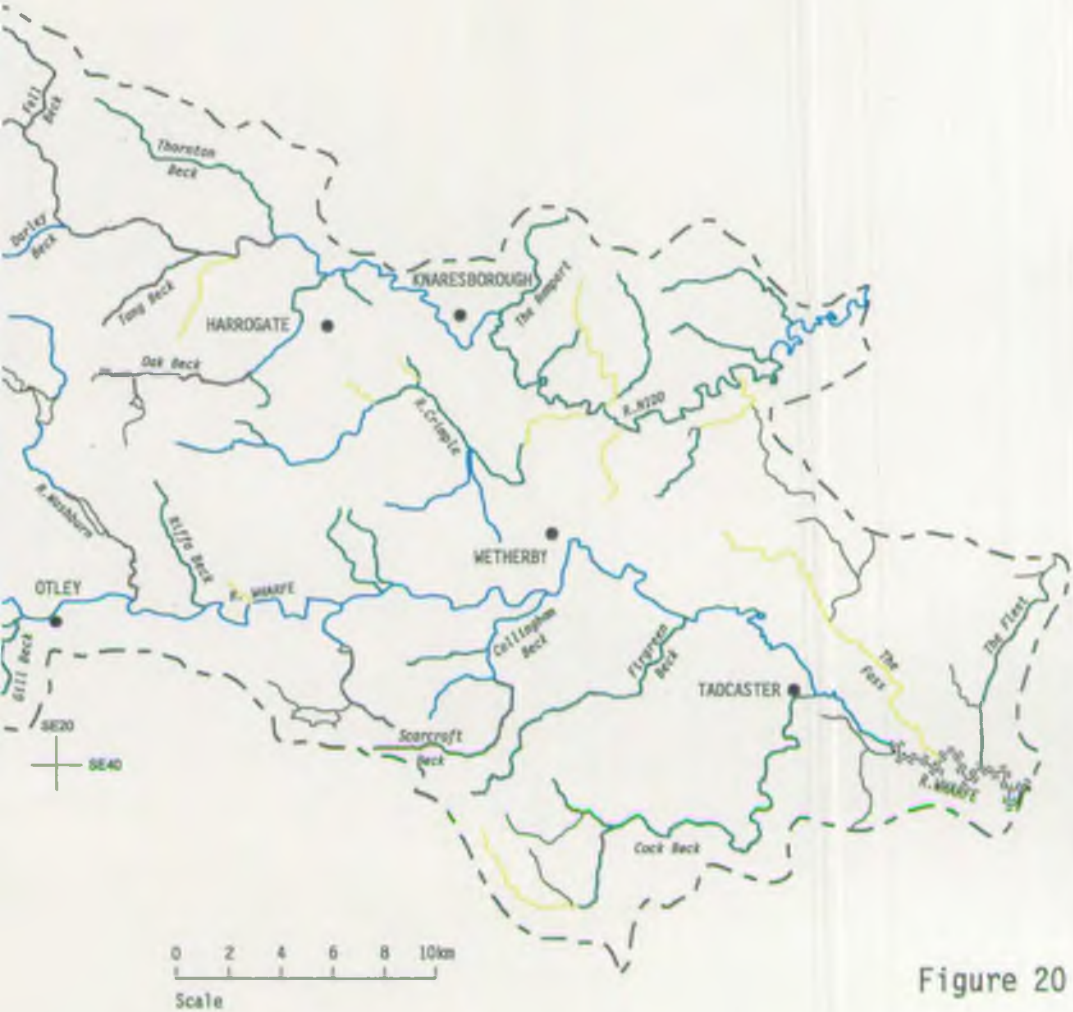



Figure 20

As a result the rivers and tributaries in the catchment are predominantly of high quality, capable of supporting trout or high class coarse fisheries and suitable for potable supply. There are, however, a small number of water courses (e.g. Oak Beck and Crimple Beck) which are of poor water quality. This poor quality is predominantly caused by sewage effluent discharges. Schemes are planned to redress these quality problems (see 5.2.2).

In addition, problems of water pollution attributable to agricultural activities occur in a number of subcatchments. Problems are being addressed by way of campaigns involving visits to every farm in a particular subcatchment to identify and highlight necessary improvements. Campaigns currently underway include the River Washburn and Weeton Beck catchments (see Issue 4).

There were over 300 incidents of pollution reported to the Agency in 1996, which had some impact on water quality. However, only two of these, (both involving large spillages of oil) were classified as 'serious' or 'very serious' incidents.

Within this Plan area there are a number of villages which have only rudimentary sewerage and sewage disposal facilities, resulting in pollution of 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).

Biological water quality is very good in the upper Nidd catchment, both in the main river and its tributaries. Some of the tributaries support faunal assemblages indicative of intermittent acidic conditions, for example Backstean and Armathwaite Gill.

The majority of the lower reaches of the Nidd catchment achieve only fair quality, with many of the tributaries being of fair or poor quality. Sewage final effluents, storm sewage overflows and farm discharges appear to be the main causes of water quality problems in this part of the area. Such issues are being investigated by the Agency and measures are being taken, where possible, to effect improvements in water quality.

The biological water quality of the whole Wharfe catchment is predominantly very good or good (above the tidal limit) including the majority of tributaries in the upper catchment. Low flows result in restricted faunal populations in some tributaries, e.g. The Skirfare, and the upper reach of the River Washburn supports a faunal assemblage indicative of acidic conditions.

A number of tributaries in the lower Wharfe catchment, along with Town Beck, Mickle Ing Beck and Gill Beck in the upper catchment, have only fair biological quality and a very small number suffer from poor quality. Deteriorations in quality are largely associated with sewage discharges and industrial activities.

The biological quality of the River Wharfe below Ulleskelf is affected by tidal influences and could not be readily classified using the Yorkshire Interpretive Index. However, both sites sampled support reasonably diverse fauna indicative of fair to good biological quality (see Figure 20).

Groundwater

There are a total of 40 groundwater quality monitoring sites in the Plan area which are sampled on an annual or biannual basis for a wide range of determinants. Within the Plan area water quality is generally good. In certain areas, natural processes have resulted in to increased hardness and elevated iron and magnesium levels. For example, water in the Magnesian Limestones may become hard where the aquifer is confined by marls (clays) owing to the presence of gypsum. In other areas of Magnesian Limestone and Sherwood Sandstone where the aquifer is exposed or covered by drift, nitrate levels are elevated. Policies such as the MAFF 'Code of Good Agriculture Practice for the Protection of Water' have been produced to tackle this problem. Monitoring to date has not highlighted any major groundwater contamination problems within the Plan area. The Agency will continue to monitor long term trends in groundwater quality.

### 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 the 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 (see Table 6), 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. See 5.4 Issue 7 and Appendix A.

Each land use band has a target for the maximum flood risk to which it should exposed. The standards are expressed as a percentage which reflects the likelihood of flood during any one year, which exceeds the capacity of defence protection that 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 1 in 50 or 2% in any one year.

Details of the targets and land use bands are given in Table 6. Map 5 shows the various land use bands for main river in this catchment. 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.

The sites on main river within the Plan area, where the indicative target standards of service for flood defence are not achieved are given in Table 7.

**Table 6: 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 |

**Table 7: Site in Area Falling Short of Target Flood Defence Standards**

| | **Urban** | | **Rural** |
|---|---|---|---|
| **River Nidd** | Pateley Bridge | | Kirk Hammerton<br>Tockwith<br>Nun Monkton |
| **River Wharfe** | Addingham<br>Ilkley<br>Otley<br>Burley<br>Collingham<br>Pool<br>Bramham | Areas adjacent to Collingham Beck | Kettlewell<br>Burnsall<br>Bolton Bridge<br>Low Mill - Addingham<br>High Mill - Addingham<br>Thorp Arch |

# NIDD & WHARFE AREA

# FLOOD DEFENCE INDICATIVE STANDARDS OF SERVICE

| LAND USE | | DESCRIPTION | RETURN PERIOD (years) TIDAL | RETURN PERIOD (years) NON TIDAL |
|---|---|---|---|---|
| | A | Urban, densely populated | 100 - 200 | 50 - 100 |
| | B | Residential, but lower density than A. | 50 - 200 | 25 - 100 |
| | C | Isolated rural communities/ intensive agriculture. | 10 - 100 | 5 - 50 |
| | D | Isolated properties agricultural use. | 2.5 - 20 | 1.25 - 10 |
| | E | Agriculture, amenity interests limited. | < 5 | < 2.5 |


Figure 21

## 6.5 BIODIVERSITY

### 6.5.1 FLORA AND FAUNA

The rivers and their surroundings support a number of species given statutory protection under the Wildlife & Countryside Act 1981 and now covered by the UK Biodiversity Action Plan . This latter initiative resulted from the Rio Earth Summit 1992 and the Environment Agency has taken special responsibility for a number of aquatic / water related species and one aquatic habitat.

Of these, the following species are to be found in the Nidd and Wharfe Plan area:

- **Water vole** ( *Arvicola terrestris* );
- **Otter** ( *Lutra lutra* );
- **White clawed crayfish** ( *Austropotamobius pallipes* );
- **Pea mussel** (*Pisidium tenuilineatum*).

There are numerous other species listed in the Red Data Books as rare or endangered that are found within the Plan area. Similarly there are habitats - most notably the flood meadows of the Nidd and Wharfe Ings (classified as MG 4 Grassland[2]) or heather moorland, which are of international importance.

The upper and middle reaches of the area are also of considerable importance from a conservation perspective. There are two National Nature Reserves and numerous SSSIs in the upper catchment, and there are proposals to declare large parts of the Yorkshire Dales National Park as an SPA .

In terms of landscape conservation, much of the upper catchment is contained within the Yorkshire Dales National Park, and sections of the rivers Nidd and Wharfe pass through the Nidderdale Area of Outstanding Natural Beauty (AONB) .

Archaeology is also of considerable importance within the Plan area and the number of Scheduled Ancient Monuments is likely to increase considerably as the Local Authorities continue their review of sites . The National Park is particularly rich in archaeological resources and this is recognised in the Yorkshire Dales National Park Plan

The Lower Nidd and Wharfe Valley was the subject of a special study which was included in the " Humber Wetland Project " undertaken by archaeologists working at Hull University. This included a review of soil deposits likely to retain archaeological interest such as pollen or other plant and animal remains, and which may be affected by changes in water tables or engineering works. See 5.6 & Appendix A.

[2]MG4 Grassland (Mesotrophic Grassland - Type 4) is a type of flood meadow grassland as classified according to the National Vegetation Classification.

# APPENDIX A: ENVIRONMENT AGENCY AIMS AND STRATEGIES

## Introduction

The Environment Agency was established on the 1 April 1996. The main aims and strategies of the Agency are detailed below along with an introduction to each of its functions.

## 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 sewerage 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, if 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 for domestic or agricultural use from surface water,

and those of less than 20 cubic metres per day for domestic use from groundwater. There are also other exemptions for small abstractions. Charges for abstraction licences are based upon quantity, source, season and loss.

To secure the proper management of water resources, the Agency operates a hydrometric network of rainfall stations, groundwater observation boreholes 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 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 areas of 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 and/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 that are 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 over 2,000 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 and minimise or 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.

**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.

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

- 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 Plan 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. These are :

- 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.

**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 Water Resources Act 1991 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; 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 the issuing of 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 Environment Agency has statutory duties to:

- ensure that water and land under the Agency's control (ie. as landowner, etc.) are made available for recreational purposes, and that the needs in this context of persons who are chronically sick or disabled are taken into account;
- promote the use of all inland and coastal waters and associated land for recreational purposes.

Recreation includes the provision of opportunities and facilities for sports associated with water and the surrounding land, passive activities around water including public access and rights of way, and the general aesthetic quality of the water environment.

These duties are identified in the Water Resources Act 1991 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 recreation 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, develop and improve 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 Environment Act 1995. 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 1995 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. However the Act extends further to cover effectively all inland waters which have the capacity to support fish, other than fish farms; the latter 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 both fish introductions and fish capture are 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, eel 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 defences, and control the actions of others so that the risk to existing and future uses (eg. development) 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 (eg. 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 rivers' the Agency has powers to control weirs and culverts which can affect the 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 enhancing 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, and to manage the inter-relationship 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 (NRA September 1993) and these are being promoted in conjunction with the initiative to prepare LEAPs.

# APPENDIX B : CHEMICAL STANDARDS FOR RIVER ECOSYSTEM CLASSIFICATION

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 8: Chemical Standards for River Ecosystem Classification**

| Class | Dissolved Oxygen % saturation<br>10 percentile | BOD (ATU) mg/l<br>90 percentile | Total Ammonia mg /l N .<br>90 percentile | Un-ionised Ammonia mg /l N<br>95 percentile | pH lower limit as 5 percentile; upper limit as<br>95 percentile | Hardness mg/l Ca $CO_3$ | Dissolved Copper µg/l<br>95 percentile | Total Zinc µg/l<br>95 percentile |
|---|---|---|---|---|---|---|---|---|
| RE1 | 80 | 2.5 | 0.25 | 0.021 | 6.0 - 9.0 | ≤10<br>>10 and ≤50<br>>50 and ≤100<br>> 100 | 5<br>22<br>40<br>112 | 30<br>200<br>300<br>500 |
| RE2 | 70 | 4.0 | 0.6 | 0.021 | 6.0 - 9.0 | ≤10<br>>10 and ≤50<br>>50 and ≤100<br>> 100 | 5<br>22<br>40<br>112 | 30<br>200<br>300<br>500 |
| RE3 | 60 | 6.0 | 1.3 | 0.021 | 6.0 - 9.0 | ≤10<br>>10 and ≤50<br>>50 and ≤100<br>> 100 | 5<br>22<br>40<br>112 | 300<br>700<br>1000<br>2000 |
| RE4 | 50 | 8.0 | 2.5 | - | 6.0 - 9.0 | ≤10<br>>10 and ≤50<br>>50 and ≤100<br>> 100 | 5<br>22<br>40<br>112 | 300<br>700<br>1000<br>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.

## APPENDIX C : 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 Nidd and Wharfe 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 copper at Beaverdyke and Scargill Reservoirs. Exceedences are thought to be due to cross-contamination at the sampling point from metal pipework. During 1996 copper levels as high as 0.185mg/l and 0.305mg/l were recorded at Beaverdyke and Scargill respectively, where the standard value is 0.50mg/l. In addition, at Buckden Barium levels rose a further 0.01mg/l above its exceedence level.

*Drinking Water Directive*

Owing to the importance of the Nidd and Wharfe catchment as a source of drinking water considerable emphasis is placed on monitoring of pesticides concentrations within the catchment. Sporadic exceedences of the 0.1$\mu$g/l limit for certain herbicides has been reported by the water companies and confirmed by the Agency's 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 in the Nidd and Wharfe catchments during 1996.

*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 180.3 km of the rivers Nidd and Wharfe, and tributaries, are designated as salmonid fisheries.

Cyprinid fisheries have been designated over 123 km of the river Nidd and River Wharfe, and tributaries. There were no significant failures to comply with the directive in the Nidd and Wharfe catchment in 1996.

*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 are currently being implemented. 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 e.g. 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.

*The EC Habitats Directive*

The EC Habitats Directive was adopted in May 1992, requiring Member States to endeavour, where they consider it necessary in their land use planning and development policies, and in particular, with a view to improving the ecological coherence of the Natura 2000 network, to encourage the management of features of the landscape which are of major importance for wild flora and fauna. Domestic legislation to implement this, in the form of Statutory Instrument No. 2716 The Conservation (Natural Habitats & c) Regulations 1994, became law on 30 October 1994.

The Regulations include :

- definitions including relevant and competent authorities;
- provision for the selection and designation of European sites;
- provision for the protection and management of sites;
- provision for the protection of certain species;
- measures to adapt planning and certain other controls.

Linear and continuous features (such as rivers and their banks or the traditional systems for marking field boundaries) or those functioning as stepping stones for the migration, dispersal and genetic exchange of wild species are noted as habitats to be particularly protected.

# APPENDIX D: GQA CLASSIFICATION

The GQA scheme is used to make regular assessments of the quality of rivers in order 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.

**Table 9: GQA Classification**

| 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 E: STATEMENT OF INFORMAL CONSULTATION

During March 1997, a wide range of local authorities and other organisations with an interest in the environment were contacted for informal consultation. Other organisations that were 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.

The breakdown of the responses is as follows:

| | (% of total letters) |
|---|---|
| Local Government | 18 |
| Agricultural (MAFF/FWAG) | 15 |
| Wildlife and Environmental Organisations | 38 |
| Recreational Groups (inc Fishing Associations) | 15 |
| Water Industry | 8 |
| Others | 8 |

**Table 10: Number of Responses Received on Each Issue**

| Response | No. | Response | No. |
|---|---|---|---|
| General positive response | 6 | Environmental enhancements and protection | 5 |
| General negative response | 0 | Habitat diversity | 3 |
| Format/layout of document | 2 | Biodiversity | 4 |
| Resource distribution | 1 | Bank erosion | 1 |
| Waste issues | 3 | Farming issues | 2 |
| Water quality issues | 6 | Cultural heritage/archeology | 1 |
| Air quality issues | 3 | Siltation in rivers/reservoirs | 1 |
| Flood defence | 4 | Abstraction from rivers | 6 |
| Control of pollution | 5 | Groundwater protection | 1 |
| Partnership issues | 5 | Planning issues | 1 |
| Recreation | 10 | Impact of forestry | 2 |
| Areas designated for protection | 1 | Statutory responsibilities | 1 |

## APPENDIX F: CONSULTATION LIST

Appletreewick, Barden & Bursall AC
Bolton Abbey Estate
Bilton Conservation Group
British Waterways Board
Countryside Commission
English Nature
Forestry Authority
Foss Action Group
Friends of the Earth
Glasshouses Fish Farm
Harrogate Borough Council
Inland Waterways Association
Low Laithe Fish Farm
Kilnsey Angling Club
Kilnsey Fish Farm
MAFF
National Trust
North Yorkshire County Council
Otley Town Council
President Nidderdale Angling Club
Ramblers Association
RSPB
Salmon and Trout Association
Selby District Council
The Tidy Britain Group
UDP Group
West Riding Anglers
Wharfedale Naturalist Society
Yorkshire Wildlife Trust
York Waterworks Plc
Yorkshire Water Services Plc

## APPENDIX G: GLOSSARY OF TERMS

| | |
|---|---|
| Abstraction | Removal of water from surface water or groundwater, usually by pumping. |
| Abstraction Licence | Licence issued by the Environment Agency under s.38 of the Water Resources Act 1991 to permit water to be abstracted. |
| 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 Plc) 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. |
| AOD | Above Ordnance Datum. Equivalent to mean sea level. |
| Aquifer | A layer of underground porous rock which contains water and allows water to flow through it. |
| Area of Outstanding Natural Beauty (AONB) | 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 the natural beauty of selected landscapes. |
| Asulam | Asulam is a herbicide used to control bracken. |
| Bacteria | Single-cell micro-organisms which multiply by fission. Aerobic bacteria need oxygen for growth. |

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| | Anaerobic bacteria grow in an oxygen deficient environment. Other bacteria are typified according to the predominant reaction involved, eg. 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. |
| 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. |
| 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 Environmental Protection Act 1990 section 75. It includes household, industrial and commercial and special waste. |
| Controlled Waters | Defined by the Water Resources Act 1991 Part III Section 104. They include groundwaters, inland |

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| | 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 (eg 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. |
| Environmental Quality Standard | The quantity of a substance found in a body of |

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| (EQS) | water which should not be exceeded in order to protect a given use of the water body. An EQS is set by the European Community through EC Directives and the Government. |
| 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 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. |
| Fissure Flow | 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. |
| Flood Plain | This includes all land adjacent to a watercourse over which water flows or would flow but for flood defences in times of flood. |
| Fly Tipping | The unregulated and hence illegal dumping of waste. |
| Groundwater | Water which is contained in saturated underground strata. |
| Headwater | 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). |
| House Equivalent (he) (population equivalent - pe) | A measure used for assessing the value of property and land protected against flooding by flood defences. |

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| Hydrograph | The graph of groundwater levels, river levels, or river flow. |
| Infiltration | Process by which fluid enters into the pores of a solid. |
| Karst | Denoting the characteristic scenery of a limestone region, including underground streams and gorges. |
| Landfill | The deposit of waste onto and into land in such a way that pollution or harm to the environment is prevented and, through restoration, to provide land which may be used for another purpose. |
| Landfill Gas | 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. |
| LAWDC | Local Authority Waste Disposal Company: A company set up under provisions of EPA 1990 to dispose of municipal wastes. Usually a joint venture between a local authority and the private sector. YorWaste is a LAWDC. |
| Leachate | Liquid which seeps through a landfill, and by so doing extracts substances from the deposited waste. If allowed to leave the site can pollute groundwater. |
| Leaching | Removal of soluble substances by action of water percolating. |
| Macro-invertebrate | Animal lacking a backbone which are retained on a 0.5mm sieve. |
| Main River | 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 |

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| | "main river" are held by MAFF in London and the Agency in Regional Offices.<br><br>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 does not have the legal power to spend public funds on drainage or flood protection works on water courses not designated as "main river". |
| Methane | $CH_4$, 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. |
| Microbe / Micro-Organism | Small organisms, usually single cells which normally are only visible under a microscope. They include algae, bacteria and fungi. See also Bacteria. |
| Mld | Megalitres per day. |
| $\mu$g/l | Microgrammes per litre. |
| mg/l | Milligrams per litre. |
| National Nature Reserve | An area of land designated by English Nature under Section 35 of the Wildlife and Countryside Act 1981. NNRs are managed by or on behalf of English Nature specifically for wildlife conservation purposes. |
| Potable Water | Water of suitable quality for drinking. |
| Prescribed Flow Condition | A condition attached to an abstraction licence which prohibits abstraction at all times when the river flow is less than a specified flow rate. |
| Public Surface Water Sewer (SWS) | Sewers which transmit surface water runoff to a watercourse. The water should be uncontaminated and is the responsibility of the sewerage |

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| | undertaker (in this case Yorkshire Water Services Plc) to maintain and control. |
| Q95 | The flow of a river which is exceeded on average for 95% of the time. |
| Ramsar Sites | Internationally important wetland sites adopted from the Convention of Wetlands of International Importance (1971) especially as water-fowl habitats and ratified by the UK government in 1976. |
| Rank Vegetation | Coarsely overgrown vegetation. |
| Regional Telemetry System (RTS) | The Regional Telemetry System allows up-to-the-minute information to be gathered by computers at an Agency office from outstations within the area. These outstations monitor river water level, flow and quality. |
| 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. |
| 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 |

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| | and is stored in a clamp or silo. Silage production results in the formation of a highly polluting effluent. |
| Site of Special Scientific Interest | A site designated under the Wildlife and Countryside Act 1981 by English Nature or the Countryside Council for Wales, being of national importance for its wildlife, geological or geomorphological features. |
| 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. |
| Special Protection Areas (SPA) | Special Protection Areas are internationally important sites designated under the EC Wild Birds Directive. |
| 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 /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. |
| Waste | 'Waste' is defined in the Control of Pollution Act 1974 Section 30(1) to include: |

(a) any substance which constitutes a scrap material or an effluent or other unwanted surplus substance arising from the application of any process; and

(b) any substance or article which requires to be disposed of as being broken, worn out, contaminated or otherwise spoiled,

but does not include a substance which is an explosive within the meaning of the Explosives Act 1875.

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| Wastes, Hazardous | A waste that, by virtue of its composition, carries the risk of death, injury or impairment of health to humans or animals, the pollution of waters, or could have an unacceptable environmental impact if improperly handled, treated or disposed of. The term should not be used for waste that merely contains a hazardous material or materials. It should be used only to describe wastes that contain sufficient of these materials to render the waste as a whole hazardous within the definition given above. |
| Wastes, Industrial | 'Industrial waste' is defined in the Control of Pollution Act 1974 Section 30(3)(b) as consisting "of waste from any factory within the meaning of the Factories Act 1961 and any premises occupied by a body corporate established by or under any enactment for the purpose of carrying on under national ownership any industry or part of an industry or any undertaking, excluding waste from any mine or quarry". Generally taken to include waste from any industrial undertaking or organisation. |
| Wastes, Municipal | Municipal waste is that waste that is collected and disposed of by or on behalf of a local authority. It will generally consist of household waste, some commercial waste and waste taken to civic amenity waste collection/disposal sites by the |

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| | general public. In addition, it may include road and pavement sweepings, gully emptying wastes, and some construction and demolition waste arising from local authority activities. |
| Wastes, Special | A particular class of hazardous wastes, so controlled by regulation that pre-notification of their transport and deposit is required to be given to statutory authorities. The procedure to be followed is described in the Control of Pollution (Special Wastes) Regulations 1980, issued under Section 17 of the Control of Act pollution 1974. |
| Water Quality Objectives | Water Quality objectives set by the Secretary of State for the Environment in relation to controlled waters. It is anticipated that these objectives will become statutory objectives in the near future. |

# APPENDIX H: ABBREVIATIONS

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|---|---|
| AMP | Asset Management Plan |
| AOD | Above Ordnance Datum |
| AONB | Area of Outstanding Natural Beauty |
| AVM | Automatic Voice Messaging |
| BATNEEC | Best Available Technique Not Entailing Excessive Costs |
| BPEO | Best Practicable Environmental Option |
| BTMA | Best Technical Means Available |
| CRI | Chemical Release Inventory |
| CSO | Combined Sewer Overflow |
| CSS | Countryside Stewardship Scheme |
| CWTN | Controlled Waste Transfer Notes |
| DOC | Duty of Care |
| DoE | Department of the Environment |
| DoT | Department of Transport |
| DWF | Dry Weather Flow |
| EN | English Nature |
| EPA90 | Environmental Protection Act 1990 |
| EPAQS | Expert Panel on Air Quality Standards |
| ESA | Environmentally Sensitive Area |
| FWAG | Farming and Wildlife Advisory Group |
| GQA | General Quality Assessment |
| HDC | Harrogate District Council |
| HLCA | Hill Livestock Compensation Allowance |
| HMIP | Her Majesty's Inspectorate of Pollution |
| HNDA | High Natural Dispersion Area |
| IDB | Internal Drainage Board |
| IPPC | Integrated Pollution Prevention and Control |
| IPC | Integrated Pollution Control |
| LAWDC | Local Authority Waste Disposal Company |
| LEAP | Local Environment Agency Plan |
| LPA | Local Planning Authority |
| MAFF | Ministry of Agriculture, Fisheries and Food |
| NRA | National Rivers Authority |
| NWC | National Water Council |
| NYCC | North Yorkshire County Council |
| OFWAT | Office of Water Trading |
| PM10 | Particulate matter below 10$\mu$ diameter |
| PPG | Planning and Policy Guidance |
| ppb | Parts per billion |
| R&D | Research and Development |
| RPG | Regional Planning Guidance |
| RSA93 | Radioactive Substances Act 1993 |
| RTS | Regional Telemetry System |
| RQO | River Quality Objective |
| RSPB | Royal Society for the Protection of Birds |
| SAM | Scheduled Ancient Monument |
| SPA | Special Protection Area |
| SSSI | Site of Special Scientific Interest |
| STW | Sewage Treatment Works |
| UWWTD | Urban Waste Water Treatment Directive |
| VOC | Volatile Organic Compounds |
| WCA | Waste Collection Authority |
| WDA | Waste Disposal Authority |
| WHO | World Health Organisation |
| WRA | Waste Regulation Authority |
| WRA91 | Water Resources Act 1991 |
| YDNPA | Yorkshire Dales National Park Authority |
| YWS | Yorkshire Water Services Plc |

## 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**

ENVIRONMENT AGENCY

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