

EA-NORTH EAST LEAPS - Box 2

# local environment agency plan

**DERWENT**  
**CONSULTATION REPORT**  
**FEBRUARY 1997**



ENVIRONMENT  
AGENCY

ENVIRONMENT AGENCY



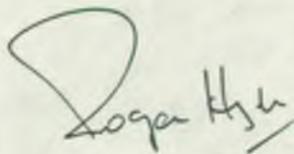
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## FOREWORD

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

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

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



**Roger Hyde**

**Regional General Manager**



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## **DRAFT VISION FOR THE DERWENT AREA**

The Derwent area is home to around 100,000 people who use the local environment in many ways and value the enjoyment that it brings their local communities.

The Derwent area is important for its outstanding conservation value and also represents the largest source of drinking water within Yorkshire, supplying several large conurbations within the County. For this reason maintenance of the already high standard of water quality is essential.

The Agency recognises the national and international conservation value of large sections of the Derwent area, notably due to the seasonal flooding of the Ings. We will work to ensure that this aspect of the local area is maintained, and where possible, improved.

There is considerable interest in the Derwent area and increasing access for its wider enjoyment is important. Recreational activities are important in the area, but only where they will not be to the detriment of its unique character. This use necessitates careful management, moderation and the cooperation of all those who have an interest in this area.

Key Environment Agency aspirations for the Derwent area:

- Work closely with others to maintain and protect the unique character of the Derwent area;
- Assess the impact of abstraction on the River Derwent and its Ings;
- Investigate the loss of river flow through swallow holes in the Derwent area;
- Encourage waste minimisation and the achievement of national waste reduction targets;
- Undertake farm and industrial campaigns to reduce the threat of pollution;
- Manage the environment and water resources of the lower Derwent in a sustainable manner;
- Actively participate in the local authority Agenda 21 process.

We wish, 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 Derwent area. It is by working together that we can achieve the sustainable improvements which will protect and benefit the Derwent area.

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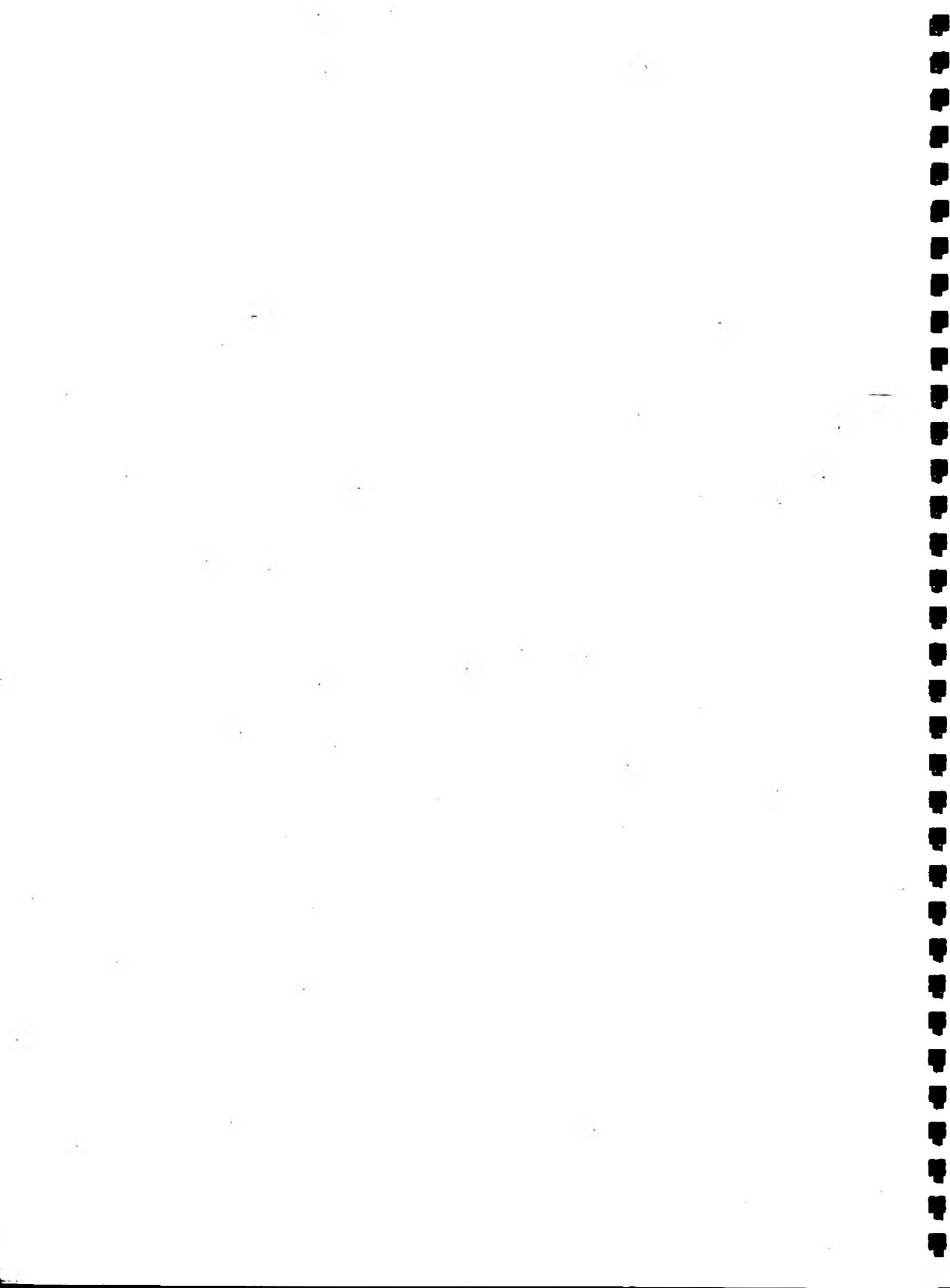
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**PART I**

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

## **1.0 INTRODUCTION**

### **1.1 THE ROLE OF THE ENVIRONMENT AGENCY**

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

**Our vision is:**

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

**We will:**

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

**Our aims are:**

- To achieve significant and continuous improvement in the quality of air, land and water, actively encouraging the conservation of natural resources, flora and fauna;
- To maximise the benefits of integrated pollution control and integrated river basin management;
- To provide effective defence and timely warning systems for people and property at risk of 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 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 promote 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 which do not impose excessive costs on society.
- To achieve significant and continuous improvements in the quality of air, land and water.

A more comprehensive description of the Agency's aims can be found in Appendix A.

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

## 1.2 LOCAL ENVIRONMENT AGENCY PLANNING - THE PROCESS

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

This is achieved by:

- focusing attention on the environment of a specific area;
- involving all interested parties in planning for the future of the area; and
- 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 Planning from individuals and organisations concerned with the environment, and would further wish to see the document used to influence and/or assist in the planning processes of others

whose decisions may impact on the management of the environment.

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

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

### **The Consultation Report**

The Derwent Local Environment Agency Plan will form one of several plans to be produced by the North East Region of the Environment Agency.

The publication of this consultation report marks the start of a 3 month period of formal consultation enabling external organisations and the general public to work with us in planning the future of the environment of the Derwent.

It describes the area, reviews the state of the local environment and identifies the uses and issues which need to be addressed and the 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 identifying and implementing an Action Plan (see below).

### **The Action Plan**

The Local Environment Agency Action Plan will include:

- a final vision for the Derwent 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 only 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 between ourselves 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 publicly available.

The review document will comprise of the following information:

- a detailed comparison of actual progress against planned progress;
- identification of additional actions necessary to maintain progress in the light of changes in the area;
- consideration of the need to update the LEAP.

## 1.3 SUSTAINABLE DEVELOPMENT AND THE ENVIRONMENT AGENCY

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

At the 1992 United Nation Conference on Environment and Development (the Rio Summit) the UK signed up to Local Agenda 21 and the Biodiversity Convention. The Department of the Environment 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" (Department of the Environment (DOE), 1992) which states that;

*"The Government has made clear its intention to work towards ensuring that development and growth are sustainable."*

The Agency has a duty to work towards sustainable development and established by the following objectives, set by Ministers.

- An integrated approach to environmental protection and enhancement, taking into consideration the impact of all activities on 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 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

The Agency is currently assessing its performance against the above objectives and producing a strategy on the way forward.

## 2.0 THE DERWENT AREA

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

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## 2.0 THE DERWENT AREA

### 2.1 INTRODUCTION

The Derwent area is primarily rural with an area of 2057km<sup>2</sup> covering one - tenth of Yorkshire. The River Derwent is one of the few largely undisturbed lowland rivers in England and Wales. There are over 60 Sites of Special Scientific Interest (SSSI) within the area plus three National Nature Reserves (NNR) and an Area of Outstanding Natural Beauty (AONB).

The River Derwent is Yorkshire's largest source of drinking water, supplying Leeds, Wakefield, Sheffield and Hull as well as smaller towns within the area. To help maintain the high water quality of the Derwent, Barmby Tidal Barrage operates at the lower end of the river, at the confluence with the Ouse, to prevent the ingress of saline waters into the Derwent and as a flood control mechanism.

#### **Geographic Area**

The area includes, in whole or in part, two unitary authorities, four district councils - all of which are part of North Yorkshire County Council, and part of a national park. The total population of the area is in the region of 100,000 permanent residents (based on the 1991 Census figures) although the number of day visitors and holiday-makers during the year runs to several million people.

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

#### North Yorkshire

Of the seven districts within the County the area includes part of the north east corner of Hambleton (covering the head waters of the Rye and Seph only). The greater part of Ryedale, the southern half of Scarborough and the eastern edge of Selby is also included. Much of this area is rural/agricultural with large sections of rough grazing, and grouse moor on the North York Moors, but with better quality agricultural land in the river valleys, the Vale of Pickering and the Lower Derwent Valley .

#### East Riding of Yorkshire Council

The LEAP area includes the northern and western edge of this Unitary Authority with the Derwent forming the western boundary of the Authority area. This area is rural in character and the main centres of population are the villages of the Derwent Valley and the towns of Pocklington and Howden. This area has undergone a major population increase over the past ten years as an overspill for York, much of this expansion has taken the form of " in-fill " housing and small estates within existing villages.

### City of York

Although a small area (approx. 270 km<sup>2</sup>) this Unitary Authority has a relatively large population. Most people live within the York urban area, which is not included in the area covered by this plan, but those living in the Derwent Valley villages are included in the plan.

### North York Moors National Park

Most of the Park is contained within the North Yorkshire County Districts of Ryedale, Scarborough and Hambleton. Under the Environment Act 1995 all the National Parks in England and Wales will assume (on 1st April 1997) the role of the local planning authority, as defined by the various Town and Country Planning Acts.

The Park covers 1436 km<sup>2</sup> and has a population of around 25,000 permanent residents, although it receives millions of day visitors per year. Despite fluctuations in the numbers of visitors to the Park the overall trend is one of a steady increase.

## 2.2 AIR

### 2.2.1 AIR QUALITY

Because of the rural nature of the Derwent area, air quality is generally not affected by local heavy industrial sources, but influenced by activities such as domestic fuel use, road traffic and agricultural use. The impact of small scale industrial activities regulated by local authorities, however, cannot be neglected. These activities are concentrated on industrial estates scattered throughout the Derwent area.

The activities regulated by the Agency within the area, under Part I of the Environmental Protection Act 1990, are diverse. They include power generation activities (Knapton Generating Station) and liquid fertilizer manufacture (Hydro Chafer Ltd). Pollutant releases to air from these processes are regulated at the release source and minimised within the duties of the Agency under the Act.

Air quality is assessed by local authorities, using a combination of active and passive monitoring techniques, the passive techniques being more commonly used in the Derwent area. The pollutants monitored are oxides of nitrogen, sulphur dioxide and smoke. Particulates, lead and volatile organic compounds are not monitored at present.

In addition to local air quality monitoring, the Derwent area contains a monitoring station at High Muffles (Cropton Forest) which measures long range pollutants, such as, acid rain deposition and ozone. This station is part of the UK National Network

of Monitoring Stations for these pollutants.

The Environment Act 1995 requires the Government to publish a National Air Quality Strategy, which is currently at consultation stage. 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 local authorities to help achieve the requirements of the National Air Quality Strategy.

## **2.3 LAND**

### **2.3.1 TOPOGRAPHY**

The boundary of the Plan area is defined to include all land which contributes surface water to the River Derwent and its main tributary, the River Rye, and all their subsequent tributaries. It also includes the Sea Cut, a manmade channel connecting the River Derwent with the North Sea, near Scarborough.

The Derwent area is bounded by the Cleveland Hills, North York Moors and Hambleton Hills to North, the Wolds and coast to the East, the Vale of York to the West and the Humber Estuary to the South.

The Cleveland Hills and North York Moors reach heights of the order of 400m AOD (Above Ordnance Datum or mean sea level), with the highest points exceeding 454 and 430m AOD altitude respectively, while the Hambleton Hills exceed 370m AOD.

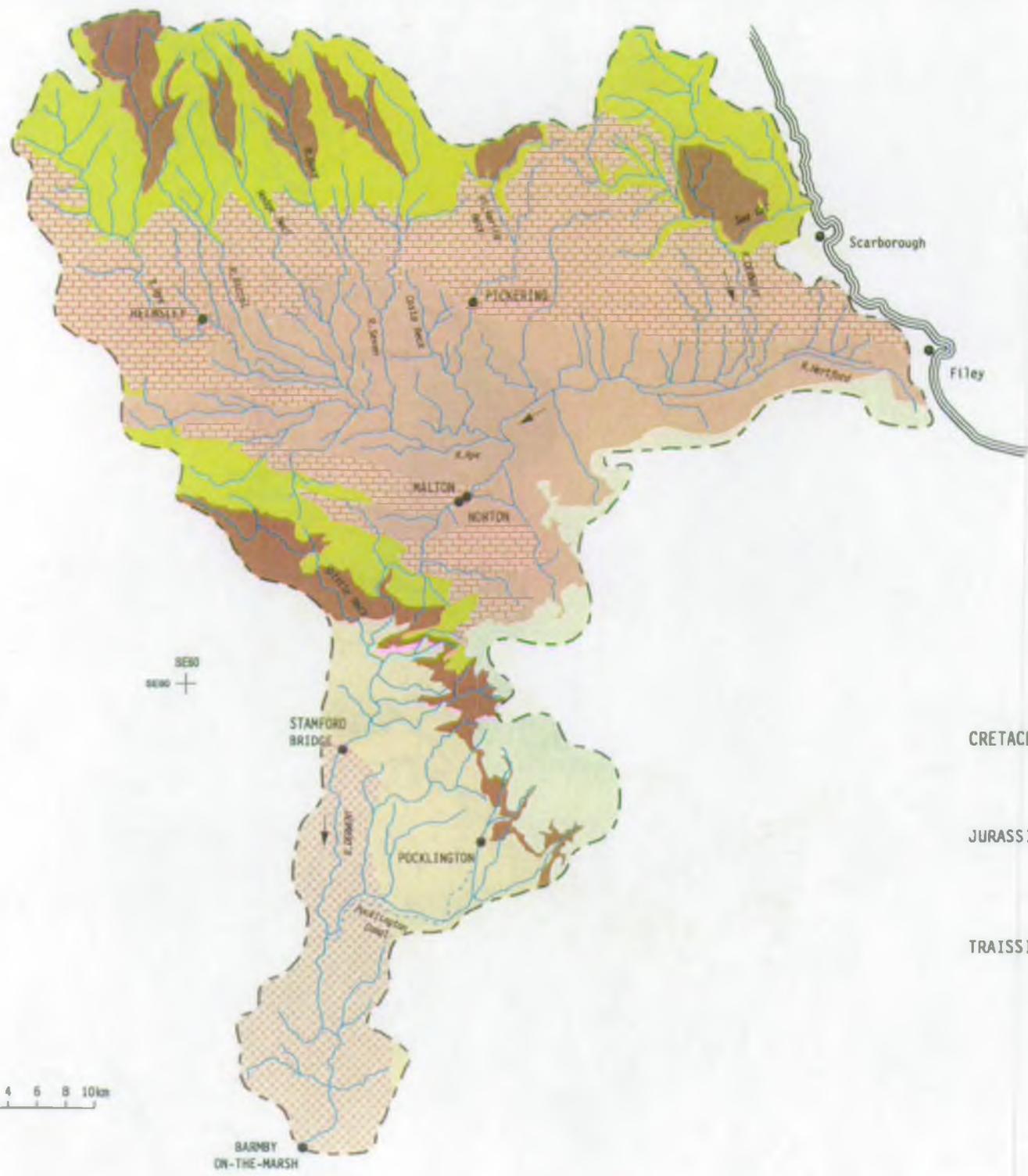
The waters of the Derwent area drain south towards its confluence with the River Ouse near Barmby-on-the-Marsh, and thereafter flow into the Humber Estuary and the North Sea. Flowing for 115km, the River Derwent falls from 260m AOD where it rises on Fylingdales Moor to below 10m AOD at its confluence with the Ouse (see Figure 2).

### **2.3.2 GEOLOGY**

The main rock types found in the Derwent area are detailed in Figure 3. A summary of the geology of the Derwent area can also be found in Table 1.



# DERWENT AREA GEOLOGY MAP



- KEY**
- CATCHMENT BOUNDARY
  - RIVER
  - - - CANAL
- |            |   |       |                           |
|------------|---|-------|---------------------------|
| CRETACEOUS | □ | CHALK |                           |
| JURASSIC   | } | □     | KIMMERIDGE CLAY           |
|            |   | □     | CORALLIAN LIMESTONE GROUP |
|            |   | □     | RAVENSAR GROUP            |
|            |   | □     | LIAS GROUP                |
| TRAISSIC   | } | □     | MERCIA MUDSTONE GROUP     |
|            |   | □     | SHERWOOD MUDSTONE GROUP   |

Figure 3





**Table 1: The Geology of the Derwent area**

Age	Rock Type	Locations	Description	Hydro-Geological Classification
Recent & Pleistocene	Drift	Part of the Vale of York & Vale of Pickering	Alluvium, Fluvial Sands & Gravels, Glacial Sands & Gravels, Boulder Clay	Non-Aquifer
Cretaceous	Chalk	Western & Northern Escarpment	White fine-grained limestone with marl seam and tabular flints	Major Aquifer
Jurassic	Kimmeridge Clay	Vale of Pickering	Dark, silty, sandy	Non-Aquifer
	Corallian Series		Calcareous Grits & limestones	Major Aquifer
	Oxford Clay		Dark shaly clays	Non-Aquifer
	Kellaways	North York Moors	Calcareous sandstones	Minor Aquifer
	Ravenscar Group		Limestones & sandstones	Minor Aquifer
	Lias. Group		Shales with thin limestones & sandstones	Minor Aquifer
Triassic	Mercia Mudstone	Part of the Vale of York	Shales & marls with some thin sandstones	Non-Aquifer
	Sherwood sandstone		Sandstone with thin beds of marl or mudstone	Major Aquifer

### 2.3.3 SOILS AND LAND USE

Soil is the uppermost layer of the earth's surface and is made a result of the interaction of several complex processes such as climate, fauna, flora, man and time. It is generally the layer in which plants grow and its presence is therefore of vital importance to

agriculture, especially in terms of nutrient content and drainage characteristics. Soils may be thin or absent in lowland areas or in valley bottoms. -As with topography (see Figure 2), the soil type is often a reflection of the underlying geology. The dominant land use within the middle and lower part of the plan area is arable with a quarter covered by agricultural pasture and meadow land and a small area associated with deciduous forest.

The upper catchment within the North York Moors National Park is predominantly heather, grass moorland, bracken and evergreen woodland.

Efficient agricultural production in the middle and lower catchment is dependant on the work that the Internal Drainage Boards (IDB's) carry out to deal with drainage in relatively low lying areas. This complements Agency flood defence work maintaining drainage margins suitable for agriculture.

Within the Derwent area the majority of residential development is in the market towns of Pickering, Malton and Norton, with smaller villages spread throughout the area. There is a small amount of industrial and business development, which tends to comprise of light industry, distribution and services.

### 2.3.3 WASTE

The waste disposal needs of the area are served by four strategic landfill sites which collectively receive the majority of household, commercial and industrial waste. These sites are supported by nine smaller landfill sites distributed throughout the area which accept only inert waste materials from construction and demolition activities. In addition arisings of liquid effluent are landspread at various locations throughout the area.

The pattern and sources of production of household, commercial and industrial waste essentially follows the population distribution and the parallel commercial and industrial base. The per capita production of waste in the area closely corresponds to the national average. However, the per capita production of industrial waste is significantly lower because of the rural nature of the Derwent area. Industrial wastes generated in the area comprise, in the main, of materials similar to household waste together with waste materials from construction and demolition activities. Only small occasional quantities of special and/or difficult wastes are produced in the area and which are mainly disposed of elsewhere.

The area has five household waste reception centres for public use with enhanced delivery of the waste to landfill disposal. In addition a large number of facilities exist for the reception recyclable of materials recovered by the public from household waste.

## **2.4 WATER**

### **2.4.1 FLOW AND RAINFALL MONITORING**

The Agency manages a regional rainfall monitoring network which includes 27 rain gauges in the Derwent area. These enable the variation in long term average rainfall to be calculated. The annual rainfall within the Derwent area ranges from 600mm near Barmby to 1100mm on the North York Moors. Rainfall in the Derwent area is less than in areas of similar altitude in the Pennines. Effective rainfall is virtually zero during summer months, especially during drought years such as 1990 and 1995.

Potential evapotranspiration over the Derwent area is slightly above the Yorkshire average of 543mm. In drought years potential evapotranspiration is likely to increase, while actual evapotranspiration decreases. Soil moisture deficits reach close to 60mm during an average summer, but can double to in excess of 100mm under drought conditions, especially in the drier south of the area.

In addition to rainfall gauges, there is a network of 16 river gauging stations, which provide information on river flows and levels throughout the area. There are also five water level only monitoring stations which operate on the lower Derwent. The data from these stations are used to produce flow statistics both on long term and annual timescale. To supplement the data, monitoring is undertaken at Barmby Barrage to enable the outflow from the River Derwent to the River Ouse to be quantified.

### **2.4.2 HYDROGEOLOGY**

The major aquifers within the area are the Corallian Limestone, Sherwood Sandstone and the Chalk. Groundwater level monitoring and abstraction boreholes in the Corallian and Sherwood Sandstone aquifers provide information on the storage of groundwater in the aquifer.

The Corallian aquifer outcrops on the hills surrounding the Vale of Pickering and is also present beneath the centre of the Vale where it is sandwiched between two impermeable layers, Kimmeridge Clay above and Oxford Clay below. The Corallian consists of a sequence of limestones and sandstones of total thickness up to 100 metres, which are extensively faulted and dissected by the rivers flowing south from the North York Moors, dividing the aquifer into a series of semi-independent blocks.

The well-developed fissure system within the Corallian Limestone permits both a rapid response to rainfall and the ingress of river water on the limestone outcrop and its discharge a few kilometres downstream, often at very large springs.

This situation both enhances the resources of the aquifer and renders it especially prone

to pollution. Groundwater quality is normally very good in the unconfined part of the aquifer except where nitrate levels are elevated in certain Corallian Limestone aquifer blocks. The River Rye and the River Derwent at East and West Ayton have swallow holes in the river bed where the underlying aquifer gains water from the river. The aquifer is chiefly used by a small number of large public supply sources close to the natural discharge points. There are also other groundwater abstractions from the Corallian aquifer in the Vale of Pickering.

The Sherwood Sandstone Group (Triassic Sandstone) consists of a thick layer (up to 300 metres) of fine/medium-grained sandstones with frequent marly layers. It outcrops in the southern part of the River Derwent area and dips under the Mercia Mudstone in the east.

Most of the outcrop area is low-lying, resulting in low hydraulic gradients within the aquifer and only small seasonal fluctuations in water levels (typically 2 to 3 metres). Much of the area is covered by glacial drift, causing artesian heads in some places. Both fissure flow and inter-granular flow are important methods of groundwater movement. There is a complex hydrogeological relationship between the drift and the underlying Sherwood Sandstone.

Groundwater quality is often good in the sandstone but deteriorates markedly near the eastern edge of the outcrop where hardness and high sulphates are associated with the Mercia Mudstone and thick drift. Concentrations of iron and manganese may pose problems for potable supplies, as may nitrates on the areas with thin or sandy drift cover.

There are active and disused quarries in the Sherwood Sandstone, the Corallian Limestone and the Mercia Mudstone. Some of the disused quarries are being used for landfill purposes.

Only the western and northern escarpments of the Chalk aquifer are included in the Derwent area. The springs on escarpments contribute a significant flow into the River Derwent.

The drift deposits, the Kellaways Rock and the Ravenscar Group are minor aquifers.

### 2.4.3 WATER QUALITY

Rivers and tributaries in the Derwent area are mainly of high quality water, suitable for abstraction for drinking water and capable of supporting good fisheries. There are however a few short stretches with poor water quality, specifically the River Hertford and a few tributaries in the middle and lower section of the Derwent, which are only capable of supporting a limited coarse fishery.

A comprehensive water quality monitoring programme enables the Agency to assess

whether or not the Derwent is meeting its required quality standards.

In the upper reaches of the area the River Derwent and its main tributaries, including the Rye and its tributaries, Costa Beck, Hodge Beck, the Dove, the Seven and Pickering Beck flow through the North York Moors. This area is generally sparsely populated and there is little industry other than farming and fish farming. There are in fact 11 fish farms in the Derwent area but there is no evidence that they have a measurable impact on chemical water quality at present. This area also has a significant tourist industry which puts a strain on the sewerage infrastructure of the small towns and villages. During the summer when flows are low some watercourses in this area sink into the limestone and emerge downstream. This can cause low oxygen levels in the watercourse when it re-emerges.

In the River Hertford catchment there are three significant Yorkshire Water Services (YWS) sewage treatment works discharges at Folkton, Seamer and Hunmanby. These discharges influence water quality in the whole of the area causing the Hertford to fail to meet its river quality objectives. The River Hertford in turn impacts on the water quality of the river Derwent below their confluence. In addition, the area also contains a significant surface water discharge from the Eastfield Industrial Estate on the edge of Scarborough which has been the source of a number of pollution incidents.

On the middle and lower reaches of the Derwent there are a number of small YWS sewage treatment works, such as Elvington and Wheldrake, which do not have a impact on water quality. There is one significant discharge to the Derwent from Malton sewage works which downgrades the Derwent from class A to class B for several kilometres. Again this is a predominantly rural area with a few small industrial estates, often on old air bases, and a small number of trade effluent discharges. Some of the tributaries in this reach suffer from intermittent water quality problems partially due to agricultural practices.

The main tributary in the lower reach of the Derwent is Pocklington Canal. The Canal is fed by Pocklington Beck which in turn receives the discharge from Pocklington sewage treatment works and from overflows on Pocklington's sewerage system. These do impact on the quality of the receiving waters.

Groundwater water quality is monitored in the Corallian and Sherwood Sandstone aquifers by a network of boreholes.

## 2.5 WILDLIFE AND HERITAGE

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

### 2.5.1 FISHERIES

The upper Derwent and most of its major tributaries, upstream of Malton, originate in, and flow southwards across, the North York Moors. These watercourses have relatively high gradients with stony beds and, generally, good water quality with low nutrient levels. Brown trout dominate the stocks of larger fish in these fast flowing streams. Recruitment is mainly the result of natural spawning although some reaches, which are managed for angling, are stocked regularly, usually with trout of takeable size. Although brown trout are relatively tolerant of low pH conditions, some of the headwaters are periodically too acidic to support significant fish stocks. In a few streams, high concentrations of heavy metals, as a result of past extraction of metalliferous ores, adversely impact fish stocks. Along the southern edge of the Moors, swallowholes in the Corallian limestone result in considerable lengths of stream bed drying up during prolonged dry periods to the detriment of the fish populations.

Grayling occur together with trout in most of the larger streams in the southern fringes of the North York Moors.

South of the Moors, the River Derwent and its tributaries have much gentler gradients as they flow across the Vale of Pickering. Although some salmonids are present, riverine coarse fish, especially chub, dace, roach and gudgeon, become dominant. The Derwent is notable for its substantial stocks of pike whilst perch have become more numerous recently. Barbel, although not very abundant, are keenly sought by anglers in certain locations, usually downstream of weirs.

The River Derwent, between the Hertford confluence and Malton, and the lower reaches of several tributaries, including the River Hertford and the Holbeck, have degraded physical habitat following channel modifications, including straightening, and excessive siltation as a result of high inputs from adjacent land. Spawning gravels and sheltered nursery and overwintering areas are in short supply. Two "fish havens" have been created adjacent to, and connecting with, the River Derwent in an attempt to address the shortage of sheltered areas. Lowering of the level of the main river between the Hertford and Ryemouth has left several tributaries "perched" with steps at their confluences which restrict fish passage. The Hertford experiences poor water quality due largely to inadequate dilution of sewage effluents to the detriment of its fish populations.

Downstream of Malton, several tributaries are highly enriched due to low flows and nutrient rich run-off from surrounding agricultural land. In addition, movements of fish

between the main river and tributaries and drains are often hindered by the configuration and operation of the outfall structures, preventing these areas fulfilling their potential as spawning, nursery and overwintering areas. Another possible factor adversely affecting survival of young fish is entrainment at the Elvington and Barmby water intakes.

Downstream of Sutton-on-Derwent, the main river was formerly tidal but the installation of Barmby Barrage has largely prevented saline intrusions whilst increasing ponding. As a result flounders have virtually been eliminated from the lower river whilst numbers of fish favouring relatively low flows, such as roach and perch, have increased.

Formerly all three British species of lampreys were present in the Derwent but sea lampreys have not been recorded since 1940. Brook lampreys are widely distributed in the upper Derwent and many stony tributaries whilst migratory adult river lampreys have been recorded in considerable numbers as far upstream as Buttercrambe weir in recent years.

Pocklington Canal, the only significant artificial navigation in the catchment, contains considerable stocks of coarse fish including common carp, roach and tench. Low flows and excessive macrophyte growths and associated water quality fluctuations adversely impact fish stocks in this watercourse.

Many still waters in the catchment contain important fish populations. The larger lakes such as Scarborough Mere, Castle Howard Great Lake and some worked-out gravel pits support coarse fisheries. Many of the smaller lakes and ponds also contain coarse fish although some are managed as put-and-take trout fisheries. Many of these still waters were constructed for purposes other than fisheries, but in recent years, ponds have been purposely designed and excavated for angling.

## 2.5.2 CONSERVATION

The Derwent is an area internationally recognised for its importance in terms of nature conservation. The river is noted as being a prime example of a lowland river and is one of a national series of river Sites of Special Scientific Interest (SSSIs) covered by a Memorandum of Understanding signed with English Nature in August 1995 (see Appendix D).

Within the Derwent area alone there are over sixty SSSIs.

The river and Ings between Newton Mask and Brighton Meadows are also designated as a Special Protection Area (SPA) under the EC Wild Birds Directive (79/409) and as a Wetland of International Importance under the Ramsar Convention. Large parts of the Ings are managed as a National Nature Reserve (NNR) and are a proposed Special Area of Conservation (SAC) under the EC Species and Habitat Directive (92/43) on account

of the flood meadow plant communities.

The upper and middle reaches of the river are also of considerable importance from a conservation perspective.

There are two NNRs in the upper catchment, Duncombe Park which includes a section of the River Rye and Forge Valley which includes part of the Derwent.

In terms of landscape conservation as a whole the upper area is contained within the North York Moors National Park, and sections of the Rye and Derwent pass through the Howardian Hills, an Area of Outstanding Natural Beauty, (both designated under the National Parks and Access to the Countryside Act 1949 (see section 5.6).

### 2.5.3 HERITAGE

Under the Environment Act 1995, the Agency has a duty to protect and conserve buildings, sites and other objects of archaeological, architectural or historic interest when undertaking its statutory duties.

Archaeological evidence of the human past is widespread in the rural landscape and rivers have been the focus for settlement from prehistoric times to the present day. Watercourses are important for the supply of water as well as the movement of people and the supply of power. Many settlements owe their existence to the presence of watercourses and other favourable physical features.

The importance of archaeology is considerable in the Derwent area with the number of Scheduled Ancient Monuments likely to increase as the review of archaeological sites progresses. There are many parks and gardens of special historic interest in the area and one battlefield, Stamford Bridge (1066) on the English Heritage of battlefields.

The Agency will continue to work closely with the relevant organisations in the Derwent area.

**2.6 KEY DETAILS**

**Area:** 2057km<sup>2</sup>

**Main Towns and Populations 1991 Census Data:**

Pickering	5,968
Norton	5,879
Pocklington	5,073
Malton	4,136
Helmsley	3,788
Stamford Bridge	2,858

**Administrative Details**

Unitary Authorities:	East Riding of Yorkshire City of York
County Councils:	North Yorkshire
District Council:	Hambleton Ryedale Scarborough Selby
National Parks:	North York Moors National Park
Water Companies:	Yorkshire Water Services Ltd. York Water Works Co
Internal Drainage Boards:	Foss Lower Ouse Muston & Yedingham Ouse & Derwent Rye Thornton Wilberfoss & Thornton

**Environment Agency Consents (1995)**

Total Number of Licensed River Abstractions	170
Total Number of Licensed Groundwater Abstractions	141
Total Number of Consented Sewage Discharges >250pe	350
Total Number of Consented Industrial Discharges (Authorised Discharges - IPC)	1
Total Number of IPC Authorisations	3
Total Number of Radioactive Substances Authorisations	1
Total Number of Radioactive Substances Registrations	11
Number of waste management licences	39
Registered Waste Carriers	94
Flood Defence Consents	26
Section 30 Consents	346

### **3.0 PROTECTION THROUGH PARTNERSHIP**

#### **3.1 INTRODUCTION**

The Agency is well placed to influence many of the activities affecting the environment through the Environment Act 1995 and other legislation. This Section examines partnerships which address longer term management of the Derwent area.

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

The following organisations are mentioned in this Consultation Report.

British Waterways  
CONSYDER  
Council for the Protection of Rural England  
English Nature  
Farming and Wildlife Advisory Group  
Local Authorities  
MAFF  
North York Moors National Park  
Tidy Britain Group  
Yorkshire Water  
Yorkshire Wildlife Trust

Partnership proposals are welcomed from other organisations.

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

#### **3.2 EDUCATION**

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

The Agency's overall remit of protecting and enhancing the whole environment

contributes to the worldwide goal of sustainable development. To do this we will work through schools and other educational establishments to develop in our children an ethos of caring for their whole environment (see issues 1 and 3).

### **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, waste management and flood defence. It also recognises some of the key groups and organisations which play a crucial role in protecting the local environment.

#### **Development Planning**

Land use is the single most important influence on the environment. It follows therefore, that land use change has important implications for the environment which can be both positive and negative. Land use planning is administered by County, District and Unitary Planning Authorities. In addition the plan area has one National Park, the North York Moors National Park which has planning powers. Control of land use change is achieved through implementation of the Town and Country Planning Acts and a range of Government Planning Guidance. This guidance highlights the importance of communication between Local Planning Authorities (LPAs) and the Agency and the relationship between land use and development.

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

#### **Development Plans**

Regional Planning Guidance for Yorkshire & Humberside (RPG12) was issued by DoE in March 1996 after consultation with the Local Planning Authorities and NRA. It sets out the following broad objectives:

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

County Council Structure Plans, District Council Local Plans and Unitary Authority

Unitary Development Plans must be produced by planning authorities. They set out the Council's land use objectives and are prepared in accordance with the RPG. These development 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 Council when formulating local development plan policies and allocating land for development.

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

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

### **Development Control**

The Agency is also a statutory consultee on certain categories of planning application and councils have discretionary powers regarding the referral of other matters. This allows the Agency's views to be considered by the council prior to individual planning applications being determined.

The planning system should not be seen to duplicate the controls which are the statutory responsibility of other regulatory bodies.

It is primarily land use change in the long term and the opportunities presented by redevelopment that will help to tackle the issues of urban run-off, contaminated land and the renewal of river corridors.

### **Local Agenda 21**

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

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

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

produce their own Local Agenda 21 programmes, to promote sustainable development and to improve quality of life. The Agency will look to work with local authorities to protect and improve the local environment through Local Agenda 21. LEAPs provide proposals for action which can feed directly into Local Agenda 21 Action Plans.

### **Air Quality**

Local authorities' regulate air pollution from thousands of industrial premises under Part I of the Environmental Protection Act 1990. These are premises with a lesser potential to pollute than those the Agency regulates. The processes concerned are known as Part B processes and only the releases to air are controlled. Local authorities will be required to review present and future air quality against air quality standards and objectives prescribed in regulations 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 Derwent area which will input into local air quality plans.

### **Waste Management**

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

### **Flood Defence**

The Agency has specific powers relating to main rivers which enable us to carry out maintenance, improvement works, construct flood defences and control work by others. The Agency have a general supervisory duty over all flood defence matters which requires working in close partnership with other drainage authorities.

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

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

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

#### **Memoranda of Understanding/Accords**

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

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

#### **Local Community**

The community has its own aspirations of what it wants from its environment. In order to protect the environment the Agency needs the support of the community to tackle issue such as litter, pollution, environmental protection and enhancement.

## 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 Derwent 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 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:

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

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

Each issue must not be viewed in isolation. They all contribute towards a single vision - the future environmental well-being of the Derwent area.

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

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## **Issues, Objectives and Proposals**

### **ISSUE 1**

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

#### **Background**

A number of initiatives have been started by ourselves and others which aim to improve the local environment. We see strengthening of existing working relationships and forging new ones, through interaction with the public, as the way forward.

#### **Objective**

Work with the local community and other organisations for the benefit of the whole environment.

#### **Proposals**

- Follow up the results of the River Derwent Parish Maps Project and encourage local communities to voice their opinions as to improvements they would like to see in their locality.
- Aid the promotion of the MAFF Habitat Scheme (Water Fringe Areas) and Countryside Stewardship schemes (the former being piloted in the Upper Derwent).
- Work with the Farming and Wildlife Advisory Group to promote farm conservation projects and sustainable environmental practices.
- In liaison with English Nature, implement the national Memorandum of Understanding on River Sites of Special Scientific Interest by March 1998.
- Ensure that the Agency's Local Environment Agency Plans are made available to all interested parties. Seek to ensure that the concept of integrated planning is taken forward by all relevant organisations.
- Actively participate in the local authority Agenda 21 process.
- Produce Water Level Management Plans to cover Sites of Special Scientific Interest (SSSIs) within the Derwent area which fall within the Agency's jurisdiction.

## **ISSUE 2**

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 both the potential adverse effects, as well as the benefits that development can have on the environment.

### **Objective**

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

### **Proposals**

- Encourage the NYMNP and local planning authorities to include policies within their development plans which will assist the Agency in protecting the environment.
- Assess the effectiveness of planning comments made by the Agency through the monitoring of planning application notices.
- Participate fully in the development control process and encourage environmental enhancement as part of the Agency's duty under the Water Resources Act 1991.
- Carry out survey work under section 105 of the Water Resources Act 1995 on watercourses identified by local planning authorities as being under development pressure.
- Ensure that the Local Environment Agency Plans (LEAPs) are made available to all interested parties. Seek to ensure that the concept of integrated local Environment Agency planning is taken forward by all relevant organisations.

### **ISSUE 3**

Lack of environmental awareness.

#### **Background**

Education and awareness raising are recognised by the Agency to be of primary importance. Awareness of educational issues is essential for successful environmental management. The Agency will work in partnership with statutory, non-statutory and voluntary groups to develop a wider understanding of environmental issues.

#### **Objective**

Promote an understanding of the need for environmental protection.

#### **Proposals**

- Produce a leaflet for schools/colleges outlining processes from flooding to flood defence.
- Utilise the opportunities for educational/interpretive facilities on the Lower Derwent in conjunction with English Nature and Yorkshire Wildlife Trust to raise environmental awareness throughout the area.
- Liaise with farmers, developers and other individuals and organisations that have an impact on the environment to raise environmental awareness (see issue 11).
- Advise those affected by the shortly to be introduced waste packaging regulations of their obligations through targeted guidance
- Actively promote an understanding of the value of water through the 'save water save our rivers' campaign.

## **ISSUE 4**

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 and 1 habitat (chalk streams) and has undertaken to draw up action plans for 8 of these species, 3 additional species from the biodiversity short list, and chalk streams.

### **Objective**

Promote the aims of the UK Biodiversity Action Plan.

### **Proposals**

- Ensure protection of the habitat for which the Agency has taken responsibility. This will include biological surveys using a new method of classifying conservation value using invertebrates.
- Work with other organisations to ensure the protection of all species and habitats listed in the Biodiversity Action Plan. Develop plans for the conservation of those species for which the Agency has taken responsibility.
- Survey all Agency owned land within the Derwent area in order to assess its ecological and recreational potential prior to drawing up management plans.
- Restore part of the existing meander loop at Sutton upon Derwent.
- Work within the framework of the existing management plans, to implement practical habitat improvements for the Vale of Pickering.

## ISSUE 5

Need for further information to enable more effective management of the environment.

### **Background**

Research and Development is an essential part of the Agency's work. The collection and analysis of detailed information about our environment will enable the Agency to formulate opinions and policies on a number of issues.

### **Objective**

Assess the impact of agriculture, forestry and acidification on the water quality, fauna and flora of the Derwent area.

### **Proposals**

- Assess the results of a three year study on the value of buffer zones. Match biological data to land use and management practices to predict the results of these changes.
- Assess the results of the study and evaluate mechanisms to measure the extent and significance of acidification in the area and compare it with the regional situation.
- Continue with an R&D project to consider the impact of agricultural activities on the invertebrate fauna of headwater streams.

## ISSUE 6

Landspreading in the Derwent area.

### **Background**

It is known from the notification procedure that 13,000 tonnes of industrial effluent per annum is land spread to predominantly 14 known locations. This represents only a fraction of the total quantity of effluent land spread. The origin and fate of the majority of materials land spread is unknown.

### Objective

Seek to ensure that the Landspreading of waste materials does not give rise to localised pollution or detriment to local amenity.

### Proposals

- Determine the scale and extent of Landspreading by identifying the sources of effluent, the haulage carriers involved and the location at which these practices are carried out.
- Institute a programme of supervision and monitoring of the activity and endeavour to promote best practice.

## ISSUE 7

Environmentally sensitive management of Pocklington Canal.

### Background

Pocklington Canal is recognised as an important site for nature conservation and has been designated a Site of Special Scientific Interest by English Nature under the Wildlife and Countryside Act. The canal, which is also an important coarse fishery, adjoins a Ramsar Site and Special Protection Area. Pocklington Canal is managed by British Waterways.

### Objective

Protect and improve, where possible, the environmental status of Pocklington Canal given its designation as a SSSI.

### Proposals

- Input into the Pocklington Canal Management Declaration through liaison with English Nature and British Waterways.
- Monitor Pocklington Beck and Pocklington Canal for possible designation as a Eutrophic Sensitive Area.

## **ISSUE 8**

Maintain and increase habitat diversity and protection of those habitats recognised for their importance for particular species, including fish.

### **Background**

The diversity of species is an important indicator of the environmental condition of an area. The Derwent area is already diverse, and this is recognised in the number of designations imposed on the river and its surroundings. The Agency, where possible will work to protect and increase the habitat diversity in the area.

### **Objective**

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

### **Proposals**

- Monitor the effectiveness of the two fish havens between Yedingham and Low Marishes.
- Maintain and improve habitats in areas which act as over-wintering refuges for juvenile fish in particular Wheldrake Beck, Fleet Dyke and Wheldrake Ings. Identify new sites which will act as over-wintering and nursery areas for juvenile fish.
- Prioritise obstructions to fish passage for further improvements and outline scheme proposals.
- Construct structures to create and improve fish habitat within the Derwent system.
- Increase availability of spawning grounds within the area through fisheries management techniques.

## **ISSUE 9**

Access to watercourses for recreational purposes.

### **Background**

As well as residents of the Derwent area there are several million visitors to the area every year. It is important that where possible, and without detriment to the environment, recreational facilities are maintained and improved. This will include such things as access to the river bank along with the creation of specialist facilities.

### **Objective**

Collaborate with other organisations to maintain, and where appropriate, improve riverside access and facilities.

### **Proposals**

- Encourage, where appropriate, a balance of recreational use within the Derwent area.
- Support, where appropriate, access and facilities for anglers and those with special needs, through collaboration with angling organisations owning rights on the river and still waters.
- Encourage angling clubs with reserved rights held exclusively for club members to allow use by non club members through the purchase of a day ticket.

## **ISSUE 10**

Impact of non-indigenous species and diseases.

### **Background**

The introduction and spread of certain species and the occurrence of new diseases and parasites may pose a threat to the existing ecology and/or landscape of the Derwent area.

### **Objective**

Where possible control alien invasive species and diseases.

### Proposals

- Continue to monitor the distribution of native crayfish, identify sources of alien crayfish and propose remedial action.
- Support MAFF and English Nature in maintaining the Derwent area as a "no go" area for imported species of crayfish.
- Raise awareness of the spread of alder root disease throughout the Derwent area.
- Raise awareness of, and monitor, invasive plant species such as Giant Hogweed, Japanese Knotweed and Himalayan Balsam.

### ISSUE 11

Threats to water quality.

#### Background

There have been a number of pollution incidents in the Derwent area during 1995. All such incidents pose a threat to water quality and potentially to abstraction for potable supply. In 1996 one such incident killed a thousand fish and closed the intake at Elvington for a short period. There are also problems with STWs and inadequate methods of sewage disposal within the area, which impact on water quality.

#### Objective

Improve water quality.

#### Proposals

- Continue to seek improvements from site operators and dischargers from public and private surface water sewers into watercourses, such as Eastfield Drain.
- Carry out farm surveys to identify sources of pollution and then instigate remedial action to reduce the number of farm pollution incidents throughout the Derwent area (see issue 3).
- Investigate Landspreading practices in the Derwent area (see issue 6).
- Ensure YWS implement improvements at Malton STW in line with the UWWTD.

- Monitor Malton STW and water quality downstream to ensure compliance with the UWWTD.
- Prevent the deterioration of water quality in areas where village drains and sewer dykes and rudimentary treatment plants are the only means of sewage disposal, by seeking improvements in sewage treatment facilities.
- Work closely with local authorities and IDB's to discourage further development in identified risk areas until adequate disposal facilities are provided.

## ISSUE 12

Poor water quality of the River Hertford.

### **Background**

The River Hertford is of poor water quality and fails to meet its River Quality Objective throughout its 21.2km. The main reason for this is lack of dilution available for the discharges from Seamer, Folkton and Hunmanby STWs. The organic input from these sources leads to low levels of dissolved oxygen and may be responsible for increased weed growth.

### **Objective**

Improve water quality.

### **Proposals**

- Ensure YWS improves sewage effluent treatment, to meet the standards required to achieve River Hertford River Quality Objectives at Seamer, Folkton and Hunmanby STWs.
- Monitor STWs on the River Hertford for possible designation as a Eutrophic Sensitive Area under the UWWTD.

### **ISSUE 13**

Deterioration of the environmental quality of the River Derwent at East and West Ayton.

#### **Background**

It is believed that changes in land use upstream of East and West Ayton have caused increased siltation between Weir Head and East and West Ayton. It is believed that this has led to a deterioration in the environmental quality of the river.

#### **Objective**

Investigate the problem of siltation in the River Derwent between Weir Head and East and West Ayton.

#### **Proposals**

- Investigate the extent of siltation in the affected reach and map areas of excess silt accumulation.
- Compare past data (if available) with the current condition to determine whether the river's ecology has declined in recent years.
- Liaise with English Nature, Derwent Anglers and local authorities on the production of a management agreement.

### **ISSUE 14**

Adequacy of certification for radioactive substances throughout the Derwent area.

#### **Background**

The use of radionuclides and disposal of radioactive substances within the Derwent area requires justification and is minimised by the use of certificates issued by the Agency under the Radioactive Substances Act 1993.

#### **Objective**

Ensure that the justifications for use of radioactive materials are periodically reviewed with the view to minimising their usage.

### Proposal

- Carry out a review of the authorisations and registrations issued, under the Radioactive Substances Act 1993, with particular attention to justification (of use and number/activity of sources employed).

### ISSUE 15

The significance of releases to air from Part A processes within the Derwent area relative to other release sources e.g. traffic and Part B processes.

### Background

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

### Objective

Develop an air strategy for Part A processes in the Derwent area and Part A processes which impact upon air quality in the Derwent that are located outside the area.

### Proposals

- Generate a Part A processes air strategy which complements local authority and national air quality objectives and strategies.
- Quantify aerial pollutant releases from Part B processes and other sources, eg. traffic, within the Derwent area.
- Assess the relative impact of Part A processes on the environment.

## **ISSUE 16**

Impact of the European Directive on Integrated Pollution Prevention and Control (IPPC), on the Derwent area.

### **Background**

A European Directive on IPPC has been passed. This will be brought into UK legislation in the coming years. The impact upon industry within the area needs to be defined; in particular the regulatory roles of the Agency require identification.

### **Objective**

Identify affected industries and discuss IPPC introduction.

### **Proposals**

- Identify effected industry groups and discuss IPPC introduction with them.
- Assess the Agency's role within the area when the IPPC Directive becomes UK legislation.

## **ISSUE 17**

Impact of droughts on the aquatic environment.

### **Background**

The drought event of 1995/96 continues to result in naturally depleted flow levels in many surface and groundwaters. The Agency needs to review the current knowledge and understanding of the behaviour of aquatic systems during and after such a climatic event.

### **Objective**

Investigate the impact of the drought and low flow conditions on the aquatic environment.

### **Proposals**

- Undertake a strategic review of ecological data in order to detect underlying patterns and where possible ascribe the causes of change.

- Compare new biological data with the results of the 1993 data in order to determine the impact of low flows on the River Derwent.

### **ISSUE 18**

Loss of water through swallow holes at East and West Ayton.

#### **Background**

In 1993 the National Rivers Authority (NRA), using a methodology produced by consultants, identified 40 rivers with low flow caused by abstraction. The River Derwent at East and West Ayton was identified as one of the top 40 low flow rivers within the country. Consultants were employed by the NRA and YWS to investigate the low flows and recommend solutions to alleviate them.

#### **Objective**

Promote the alleviation of the low flow problem at East and West Ayton that is related to abstraction.

#### **Proposal**

- Employ consultants to carry out an Environmental Assessment of the proposed solution and if acceptable implement the solution.

### **ISSUE 19**

Sustainable management of the water environment of the Lower Derwent Valley.

#### **Background**

The Lower Derwent is recognised nationally and internationally to be a river and wetland of great conservation value. This is reflected by a number of designations under the Ramsar Convention and EEC Directives. The Derwent also represents the largest potable supply within Yorkshire, supplying several major conurbations in the county. There is clearly a balance to be met managing the environment, water resources, flood defence and navigation.

#### **Objective**

Work together to manage the Lower Derwent Valley in a sustainable way.

### Proposals

- Initiate a joint project with English Nature and YWS to model and manage the Lower Derwent.
- Review consents in the Lower Derwent in line with the Agency's responsibilities under the Habitats Directive.

### ISSUE 20

The drying up of the River Rye in Duncombe Park National Nature Reserve, during low flows.

#### Background

In the past, Ryedale Anglers have blocked the swallow holes and repaired the wall section in the river. In the last few years this practice has been stopped and meanwhile a fish farm licence has been granted to take spring water supplied by the swallow holes.

#### Objective

Assess the effect of repairing the broken wall and sealing the swallow holes on spring flows at Rye House Fish Farm.

#### Proposal

- Employ consultants to carry out a pilot investigation during low flows to quantify the effect of sealing the swallow holes and repairing the broken wall on a temporary basis, on river flow and spring flows at Rye House Fish Farm.

## **ISSUE 21**

Risk of flooding to people and property.

### **Background**

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

### **Objective**

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

### **Proposals**

- Investigate the provision of additional flood warnings for the lower Derwent.
- Undertake a programme of works to maintain Agency flood defence assets.
- Improve flood operations by remotely operating the structures at Kirkham and Stamford Bridge through the use of telemetry.
- Carry out feasibility studies for increasing the standard of flood protection at Malton, Pickering, Stamford Bridge and Sinnington
- Carry out scheme to repair Whitby Road Bridge (A165 road bridge at Scalby, near Scarborough)

## **ISSUE 22**

Introduction of landfill tax.

## Background

On 1 October 1996 a new landfill tax was introduced. This has added £7 per tonne to the cost of disposing of household/industrial/commercial waste and £2 per tonne to the cost of disposal of inert materials e.g. builders rubble. It is anticipated that this tax may potentially result in an increase in fly-tipping by waste carriers in an effort to avoid disposal charges.

## Objective

Combat a potential increase in the level of fly tipping in the Derwent area.

## Proposal

- Undertake an anti-fly tipping campaign in conjunction with NYMNP relevant local authorities and the Tidy Britain Group.

## ISSUE 23

Illegally deposited tyres on Brighton Airfield.

## Background

Several hundred thousand tyres were illegally deposited at Brighton airfield in the late 1980's. Planning permission was granted for a landscaping scheme consisting of clay bunds, within which the tyres were to be incorporated. The scheme began in the summer of 1995, and approximately half of the tyres have now been used. However, there is still a substantial number of tyres present on site, posing an obvious fire hazard, with associated contaminated run-off and air quality problems should a fire occur.

## Objective

Ensure that any environmental damage from the tyres is prevented/minimised.

## Proposals

- Maintain and develop a secure working relationship with the emergency services and the local authorities in relation to the site as a fire hazard.
- Prepare a contingency plan to avoid/minimise the likelihood of environmental damage should a fire occur.

## **ISSUE 24**

Inadequate awareness of waste management legislation amongst those involved with waste.

### **Background**

Compliance with existing and new waste management legislation is imperative if the Agency is to minimise the effect of waste on the environment. The Agency will ensure compliance with existing Duty of Care legislation and that new legislation regarding the controls over waste oils and asbestos cement products is promoted to those who are unaware of its existence.

### **Objective**

Promote a wider understanding of new and existing waste management legislation.

### **Proposals**

- Circulate information and provide guidance to operators of licensed facilities on recognised best practice. Where appropriate, convene tutorial sessions and develop an incentive scheme to commend high standards and notable improvements.
- Increase awareness amongst waste producers of Duty of Care Regulations and the Carrier Registration System through a programme of visits to major waste producers.

## **ISSUE 25**

Incomplete understanding and knowledge of local industry's recycling and waste minimisation activities.

### **Background**

The position regarding recycling of household waste is well monitored and documented by local authorities. However, the position with respect to industrial and commercial waste is less clear in terms of recycling and waste minimisation. The Agency needs to be in a position to assess the overall performance with relation to recycling and waste minimisation in the Derwent area in order to promote best practice.

**Objective**

Establish the extent of recycling and re-use of commercial and industrial waste materials.

**Proposals**

- Identify the major companies/organisations currently undertaking recycling initiatives and determine the quantity and nature of materials recycled.
- Assess the opportunities for expansion and adoption of successful activities by comparable industries.
- Encourage firms in the Derwent area to minimise the volume of waste produced.

**ISSUE 26**

Memorandum of Understanding with English Nature.

**Background**

Conservation has become an increasingly important consideration on the Derwent since the 1970's as comparable sites have been lost or degraded. Comparisons with other sites, both national and international, provide an indication of just how important the Derwent area is. The Agency is committed to ensuring that any activity in the Derwent area takes the various designations into account.

**Objective**

Progress the Memorandum of Understanding with English Nature

**Proposals**

- Complete drafts of the conservation strategy and consenting protocol.
- Implement the conservation strategy and consenting protocols.

**PART II**

Part II is split into two sections.

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

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

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## 5.1 **ECONOMIC**

### 5.1.1 **DEVELOPMENT**

#### **Background**

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

#### **Local Perspective**

The Agency has a full and active dialogue with all the local planning authorities, including the North York Moors National Park, within the River Derwent area, at all levels of development control. This extends from making comments on individual applications to providing policy inputs to structure and local plans.

The Agency participates in the planning process to protect the public and the environment from any adverse effects associated with development. The Agency will, therefore, oppose any specific development which conflicts with this purpose. Furthermore, it will encourage LPA's to adopt policies for protecting both the public and the environment.

#### **Residential development**

North Yorkshire County Council have 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 1970's in order to relieve pressure on the County's environment. However, there is a need to ensure that sufficient land is made available for housing in the right places. Within the Derwent area the majority of housing development will be located in existing centres of population; notably in the market towns of Pickering, Malton and Norton.

PPG 12 "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.

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

encourage development to be phased in line with improved infrastructure provision. In addition to sites allocated for residential use in local authority development plans, there may be opportunities for small scale infill development. In existing centres these should be connected to the public foul sewer. In outlying, rural areas this may not be practicable. The Agency will advise LPAs on the suitability of private drainage arrangements. Septic tanks have the potential to pollute the water environment if not adequately installed and maintained. The Agency will request planning conditions, where appropriate, to ensure the environment is protected.

Within the Derwent area there are a number of villages 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.

There are a number of settlements where effluent discharge from septic tanks is adversely affecting the water quality of watercourses within the area. In these areas treated effluent discharges or cesspools are the only acceptable means of foul disposal for limited infill development. The Agency has developed pollution control zones to guide LPA's (see Figure 5).

### 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 LPA's of measures required to ensure the risk of pollution of 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 due to the increase in hard surfaces; contamination from surface water runoff and sewage/trade effluent.

The Agency will advise LPA's 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.

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

### Industrial Development

Industrial and business development in the Derwent area tends to comprise of light industry, distribution and services. These are developments which fall into Classes B1, B2 and B8 of the Use Classes Order and largely fall outside the remit of Integrated Pollution Control, but 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; and
- water used for vehicle washing.

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

Disused airfield sites at Full Sutton, Pocklington and Brighton have been utilised for industrial development. Part of the Pocklington Industrial Estate is served by a foul sewerage system, the other sites have no foul drainage in place. PPG 23 "Planning and Pollution Control" states that sewage disposal is capable of being a material consideration in the determination of a planning application. The Agency will advise LPA's where existing facilities are considered inadequate and encourage development to be phased in line with improved infrastructure provision.

Table 2 shows the current position of local authority plans in the Derwent area.



Table 2: Planning in the Derwent Area

<b>County Councils</b>		
<b>Local Authority</b>	<b>Title of Plan</b>	<b>Current Stage</b>
North Yorkshire	County Structure Plan Alteration No.1 Alteration No.2 Alteration No.3  Minerals Plan	Adopted Nov 1980 Adopted Jan 1987 Adopted Aug 1989 Adopted Oct 1995  Deposit Draft, Sept 1995
<b>District Councils</b>		
Ryedale District Council	Ryedale Local Plan	Consultation Draft, April 1995
Hambleton District Council	Hambleton District Wide Local Plan	Deposit Draft, Sept 1994 Public Inquiry started Feb 1996
Scarborough Borough Council	Scarborough Borough Local Plan	Deposit Draft, July 1995
Selby District Council	Selby District Local Plan	Consultation Draft, June 1995
York City Council	City of York Local Plan	Consultation Draft, Feb 1994
East Riding of Yorkshire Council	Covered by Beverley Local Plan and East Yorkshire Local Plan	Planned - East Riding District Wide Plan 1996/97
<b>National Parks</b>		
North York Moors	North York Moors Local Plan	Adopted Nov 1992, currently under review

## 5.1.2 TRANSPORT

### Background

Government policy set out in "This Common Inheritance" seeks to control emissions of greenhouse gases which lead to global warming. Central to this concern is the acknowledgement that transport contributes to approximately 20% of Britain's total CO<sub>2</sub> emissions, most of which comes from road transport.

National planning policy guidance is set out, primarily in PPG12 and PPG13 "Transport". It recognises the need to reduce the demand for transport; and to encourage the development of acceptable alternatives to the private car.

### Local Perspective

Within the Derwent area there are a number of places where unacceptable levels of congestion have resulted in environmental, economic and safety problems. As a result a number of road schemes are planned.

Some road schemes can provide large areas of impermeable surface draining to a single point, discharging into either a watercourse or to soakaways and may pose increased flood and pollution risks. Pollution can occur as a result of accidental spillage or as a result of the cumulative effects of tyre and brake wear, vehicular emissions and the use of de-icing materials. The Agency will advise where flood compensation schemes and pollution prevention measures are required

In connection with proposed housing and industrial development at Middle Deepdale/High Eastfield, Scarborough, a link road is proposed between the A165 and A64.

The majority of area occupied by the link road options is underlain by the Corallian Limestone; classified by the Agency as a major aquifer, being important for potable water supplies.

The Agency has been in consultation with Scarborough Council regarding this road scheme and has advised that the further south the route, the smaller the risk to the groundwater resource as the Corallian aquifer is protected by drift deposits and Kimmeridge Clay.

### 5.1.3 POWER GENERATION

#### Background

Power generation processes contribute to the national and international issue of acid rain generation and can impact upon local air quality via sulphur dioxide and nitrogen dioxide releases. They are regulated by different organisations depending upon the size of the operation. The Agency regulates the larger facilities, of greater than 50 Mega Watts (MW), having greater polluting potential, for all releases to the environment as Part A Processes under the Environmental Protection Act 1990 (Part I). Local Authorities regulate the smaller facilities for releases to air only.

#### Local Perspective

There is an Agency regulated site within the Derwent area. This site is a small electrical generator (<100 MW) and has consent limits for pollutants which reflect the residual duties under the legislation of Best Available Techniques Not Entailing Excessive Cost (BATNEEC) and employing the Best Practicable Environmental Option (BPEO).

This site is not considered to have a significant impact on local air quality.

### 5.1.4 STORAGE AND USE OF RADIOACTIVE MATERIALS

#### Background

The term radiation is very broad. It includes for instance 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 can change form and in so doing emit energy as rays or particles and are 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 administration and enforcement of the Act in England and Wales. This takes the form of registrations (keeping and using radionuclides) and authorisations (accumulating and disposal of radioactive waste).

Nuclear sites are those licensed under the Nuclear Installations Act 1965 and include nuclear power stations, nuclear fuel fabrication and reprocessing plants.

Non-nuclear sites include hospitals, veterinary practices, research centres and manufacturing sites. Discharges of radioactive wastes to the environment from these

sites may only be made (subject to certain exemptions) in accordance with authorisations issued under RSA93.

### **Local Perspective**

Within the Derwent area there is one authorisation covering the disposal of radioactive waste arising from veterinary practice activities.

There are eleven registrations in the Derwent area for the keeping and use of closed radioactive sources. These are predominantly used in the agricultural industry as crop flow measurement devices on combine harvesters although some sources are also used in industrial radiography, density measurement devices and vehicle paint spraying activities (see issue 15).

## **5.1.5 MINERAL EXTRACTION AND MINING**

### **Background**

Mining and quarrying can affect the water environment due to the physical presence of a mine or quarry, dewatering or discharges from a site. Quarries can intercept runoff from surrounding areas thereby depriving surface water features of water, or intercept groundwater flow which may feed springs or provide groundwater supplies through borehole abstractions.

Dewatering at mines and quarries can affect groundwater flow which can then affect groundwater abstraction, springs and surface water features by reducing inflow and lowering the water table. Discharges can have an impact on receiving waters due, for example, to the presence of elevated levels of suspended solids which can clog the bed of a stream creating a poor environment for flora and fauna. Mining subsidence can also affect flood defences and the level of protection provided.

North Yorkshire County Council's Minerals Local Plan (Deposit Draft) sets out policies and specific proposals for the development and use of land. The Agency has been involved in the consultation process associated with this document. The Agency is also a statutory consultee on all planning applications for mining, quarrying and mineral extraction. As such, the Agency comments on proposals to ensure that the environment is protected. Direct discussion with the operator is also an important part of the process especially on developments with a potentially large impact on the environment. Responsibility for implementing conditions placed on planning agreements falls to the developers/operators and where necessary is enforced by local planning authorities. The Agency has a good working relationship with the mining industry, regular meetings are held to discuss the implications of possible future subsidence.

### Local Perspective

Over the years the Agency has commented on several proposals for sand and gravel extraction throughout the area, including sites at Seamer, Bilby, Gatton, Glaisdale, Cawton and Newton upon Derwent. Comments have also been made on proposals to extend chalk abstraction at Burnby as well as the application by RJB Mining to extract Barnsley Seam coal by the extension of underground workings east of the River Derwent near Bubwith.

The extraction of minerals has the potential to affect the Derwent area. Mineral workings have the potential to pollute or derogate both surface and groundwaters by reducing groundwater levels which may reduce flows in surrounding watercourses damaging natural habitats. Mineral workings in flood plains or their subsequent restoration, must not affect the ground level of a site such that the amount of flood storage capacity is reduced.

In dealing with these proposals the Agency will ensure that there is no loss of flood plain storage either temporarily or permanently and that there is no increase in flood risk.

Where restoration proposals allow, the Agency will seek to ensure environmental enhancement to aquatic habitats through active participation in the planning process.

## 5.1.6 FISH FARMS

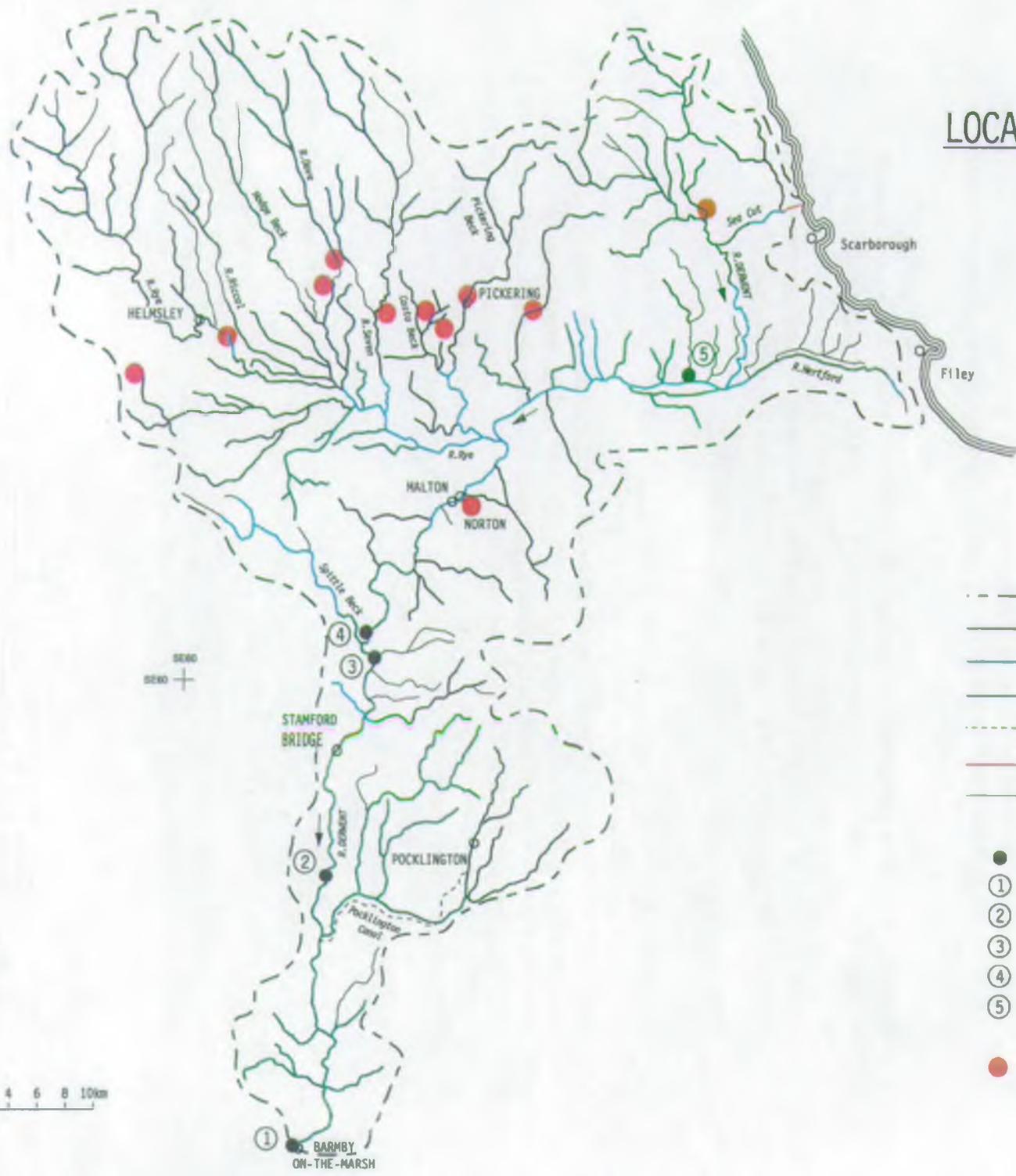
### Background

High quality rivers have historically been subject to development for fish farm purposes, especially spring-fed lowland systems like the Derwent. Fish farming has expanded rapidly to meet growing demand and in many instances has contributed to problems such as the accumulation of organic silts, increased nutrient loading, increased ammonia levels and the escape of non-native fish. Changes in feeding practices and better management of fish farms have reduced the decline in water quality to some extent in recent years.

### Local Perspective

There are 11 fish farms within the area which utilise the good quality water to rear trout for restocking and for sale to retail outlets and the general public. Farm size varies considerably along with their potential to cause a pollution incident. The high density of sites rearing rainbow trout for retail purposes are of most concern with regard to escapes of non-native fish species. Due to the intensive nature of fish farming there is always the potential that it will result in higher levels of ammonia, if not properly monitored.

# DERWENT AREA LOCATION OF FISH SPECIES AND FISH FARMS



### KEY

- CATCHMENT BOUNDARY
- TROUT & GRAYLING ONLY
- MIXED COARSE FISH & TROUT
- COARSE FISH
- CANAL
- MAINLY MIGRATORY SALMON
- NO FISH PRESENT
- MAJOR OBSTRUCTIONS TO FISH PASSAGE
- ① BARMBY BARRAGE
- ② SUTTON ON DERWENT WEIR
- ③ BUTTERCRAMBE WEIR
- ④ HOWSHAM WEIR
- ⑤ GAUGING WEIR BROMPTON BECK
- FISH FARM

Figure 6

In general, fish farms have not been responsible for a major deterioration in water quality or the quality of the fishery within the Derwent area. However, they have been responsible for a localised biological change in the watercourse due to the build up of organic silts. A comprehensive review of all fish farm consents within the area has recently been completed and a report is available. The report shows that no significant water quality problems exist as a result of fish farm activity, however, the situation will continue to be monitored.

The majority of fish farm development has taken place in the upper reaches of the Derwent system where the water becomes less acidic than the headwaters. Whilst two fish farms have been granted a consent on Shallowdales Beck, only one is currently in operation. The Agency will assess any applications for further development in the area on individual merit. However, we will generally resist further development, because many of the headwaters are of significant value in terms of their ecological quality and require protection.

### **5.1.7 LAND USE, AGRICULTURE AND FORESTRY**

#### **Background**

Land use and land cover can have a considerable impact on the physical and chemical condition of surface and ground waters. The way in which land is used, whether forestry, agricultural or urban will affect not only the adjacent watercourse, but also considerable distances downstream. Good land management within the plan area is, therefore, seen as vital in maintaining and improving the environment.

Agricultural pollution prevention has been greatly aided by the introduction of the Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) Regulations 1991. These regulations ensure that new or substantially altered, farm waste storage facilities comply with minimum size and construction criteria.

Forestry in Britain is controlled by the Forestry Commission which has recently been split into The Forest Enterprise and The Forestry Authority. Forest Enterprise runs the land and forestry holdings of the Commission as a commercial enterprise whilst the Forestry Authority sets standards for the forestry industry, runs grant schemes to assist private woodland owners, and ensures that regulations for plant health and tree felling are complied with.

European Community 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.

### **Local Perspective**

Land use within the area is varied and almost all related to rural activities.

The land cover percentages given below are from unvalidated data from an Institute of Terrestrial Ecology Landsat survey of land cover for 1990.

The dominant land use within the area is estimated to be arable (40%) with 25% covered by agricultural pasture and meadow land and a further 5% associated with deciduous forest. Arable land predominates in the lower catchment.

Heather/grass moorland covers 9%, bracken 6% and evergreen woodland 5% of the Derwent area in total and dominates the upper area, within the North York Moors National Park.

Approximately 2000 hectares of bracken was sprayed with the herbicide asulam, in 1992 and 1993 to control and manage bracken as part of the ongoing moorland conservation programme by the North York Moors National Park. Guidelines on asulam spraying have now been produced and are fully supported by the Agency. High and low risk sites have been identified on a zonal basis and this, along with a new methodology is used when assessing consents and applications for asulam spraying.

Large scale commercial forestry occurs on the North York Moors where some 20,000 hectares of conifer and mixed woodland are concentrated in Cropton, Wykeham, Dalby, Langdale and Harwood Dale Forests, with lesser concentrations around Rievaulx, Scawton, Wass Moors and the Howardian Hills. Other plantations occur in the Vale of Pickering, on the Yorkshire Wolds and the Vale of York .

Some 22% of the North York Moors are forested with 18% owned by the Forest Enterprise, a major employer in the area. The public have access on foot to Forest Enterprise land as a matter of policy, and provision is made for more specialist recreational activities in certain areas. In addition, the Forestry Authority also run a number of grant schemes, including their Farm Woodland Scheme to encourage farmers and landowners to plant small broad leaved woodlands.

The Environment Agency, through our sponsorship of the North Yorkshire Farming and Wildlife Advisory Group (FWAG), encourage landowners to take up this grant and are in direct consultation with the Agency with regard to riverside planting and tree management schemes.

### 5.1.8 TOURISM

#### Background

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

The growth of tourism is largely influenced by available accommodation and facilities and so the policies focus on these aspects. The area will concentrate the majority of serviced accommodation in settlements, especially the market towns and larger villages. Whilst favouring tourism development in these areas the Council recognises that it is the countryside where many tourists want to be and 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 the effects on the landscape, nature conservation, farmland and rural settlements and communities.

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

#### Local Perspective

Tourism provides a major source of income and employment, particularly in the north of the Derwent area. The North York Moors receives several million visitor days per year, although not all these visitors will be based in the Derwent area, with many staying on the coast.

The impact of visitor traffic on towns and villages within the area is a major cause of concern for local people. The A64, A170, A169 and the A166 are the main routes to the coast and receive very heavy traffic during the main holiday season and at week-ends throughout most of the year.

The main visitor attractions are within the National Park and the Howardian Hills and the local planning authorities concerned have well developed visitor policies and strategies to cope with any change. A large number of continental visitors arrive at the port of Hull and pass through the Derwent area on the A1079 on their way to York. Some of the visitors to York stay in hotels and guest houses in the Derwent Valley.

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 sections). 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 from future development and its effect on 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 and involves the inspection and monitoring of licensed facilities. The Agency must ensure that waste is disposed of in accordance with the legislation and best practice. This arrangement also enables the Agency to take appropriate enforcement action to ensure that these standards are met.

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, due to be implemented during 1996, covers packaging and packaging waste. The Agency's role will be to monitor and enforce the

requirements. Other schemes intended to be introduced will address other waste materials such as tyres and scrapped cars.

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

- licensing of 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;
- registration of Waste Carriers and Brokers and promotion of the Duty of Care;
- registration of activities exempt from licensing;
- collection of information about waste arisings and the preparation of a waste management plan;
- responding to planning consultations where issues concerning waste may be a relevant factor;
- maintenance of a public register and the general provision of waste management information and advice.

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

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

#### 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:

- quantities of waste generated by various sectors;
- quantities of waste recycled;
- quantities of waste from which energy is recovered;
- 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 help shape waste management practices in the future and provide a

mechanism to move the emphasis up the waste hierarchy.

### **Local Perspective**

The area benefits from the presence of four major landfill sites, namely Seamer Carr, Knapton Quarry, Cauklands Quarry and Brighton Airfield. Each site, by virtue of its high input of bio-degradable waste coupled with natural or engineered high level containment, provides a disposal outlet for the types and quantities of waste generated in the area. Some of the landfill sites also accept special waste generated outside the area.

### **Disposal of controlled waste to land**

The strategic waste disposal needs of the area in terms of household, commercial and industrial waste are currently met by a network of four major landfill sites which accept biodegradable waste and eight sites which accept inert waste.

The combined input of waste to the sites is around 210,000 tonnes per annum. With levels of waste production expected to remain constant, these sites have sufficient capacity for a further 4 years. The eight minor landfill sites are primarily used for the disposal of inert waste material. Presently the combined input of inert waste to the sites is in the region of 130,000 tonnes per annum, and the sites have long term future capacity.

In addition to the disposal of solid waste by conventional landfill methods, the disposal of certain industrial effluents by surface application to farm land is also practised. An estimated 15,000 tonnes per annum of effluent produced by 20 food manufacturers is periodically applied to farm land at 11 locations by two specialist contractors. Examples of effluent applied to the surface of farm land include potato starch and milk whey.

The disposal of effluent at the gas fired electricity plant at Knapton, near Malton, provides an unusual example of subterranean disposal. Energy produced from the gas drying and purification process is used to inject waste, via a borehole, into the gas field, 2km below ground.

### **Movement of controlled waste**

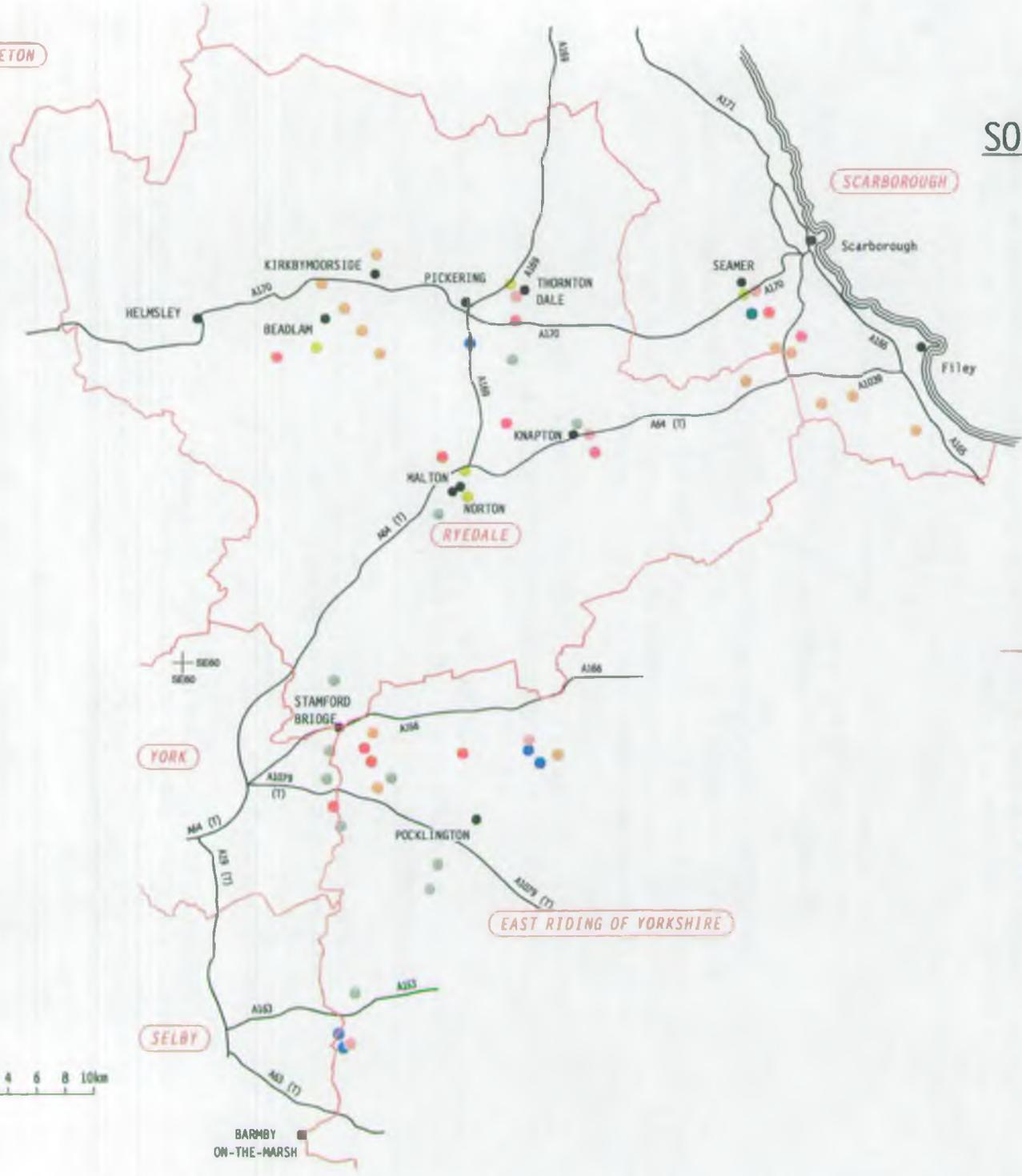
It is estimated that 160,000 tonnes per annum of controlled waste is produced and disposed of within the area. Although the exportation of waste from the catchment is negligible, the importation of waste is highly significant with an estimated 95,000 tonnes per annum received into the area for disposal from, primarily, the Scarborough area and, to a lesser extent, the York area.

Transportation of consignments of waste material from the source of production to the

HAMBLETON

# DERWENT AREA SOLID WASTE DISPOSAL

SCARBOROUGH



## KEY

- ADMINISTRATIVE BOUNDARY
- TRANSFER STATION
- CIVIC AMENITY SITE
- RECYCLING CENTRE
- SCRAPYARD/VEHICLE DISMANTLER
- LANDSPREADING SITE
- CODISPOSAL SITE
- INERT SITE



YORK

EAST RIDING OF YORKSHIRE

SELBY

BARBY ON-THE-MARSH

Figure 7

ultimate disposal point is undertaken largely by direct road haulage. However, approximately 10% of the total quantity of controlled waste disposed of in the catchment passes through one of the nine waste transfer stations or civic amenity facilities.

The disposal of controlled waste gives rise to an estimated 700 Heavy Goods Vehicle movements per day with an average transfer distance of nine miles.

Over 90% of the total quantity of controlled waste deposited in the area is collected and transported by the local authorities and eight major professional waste disposal contractors. The remainder is transported by 86 registered waste carriers as an ancillary activity to their main businesses.

#### Commercial and industrial controlled waste production

Production of controlled waste from commercial and industrial sources in the area amounts to some 300,000 tonnes per annum. Almost half of this tonnage is effluent arising from the gas-fired electricity generating station near Knapton.

The production of general commercial and industrial waste of similar character and composition to household waste is dispersed relatively uniformly throughout the area with only the industrial estates of Pocklington, Full Sutton and Brighton identifiable as point sources of production. Commercial and industrial waste of this nature is estimated at 30,000 tonnes per annum.

The building, civil engineering, construction and demolition industries collectively give rise, on average, to 90,000 tonnes per annum of largely inert waste material.

Industrial effluent resulting from primary food manufacture at locations throughout the area, but not disposed of to the public sewerage system amount to an estimated 10,000 tonnes per annum.

Relatively minor quantities of difficult and special waste material are produced from printing, electronics and paint manufacture.

#### Production and recycling of household waste

Household waste production in the area is presently estimated at 38,000 tonnes per annum. This together with an additional 50,000 tonnes of household waste generated outside the catchment, principally in the Scarborough area, is disposed of untreated, at the major landfill sites of Seamer Carr, Thornton-le-Dale and Bridlington.

The quantity of household waste requiring disposal by landfill is reduced by the efforts of local authorities and voluntary organisations in providing recycling facilities for public

use. Nearly one hundred recycling outlets are available throughout the area ranging from major recycling centres located near the main towns which can accommodate glass, newspapers, engine oil, scrap metal, plastics and bric-a-brac down to the single, now familiar, "bottle bank" at car parks and similar locations frequented by the public. Currently about 6% of household waste is recycled.

A particularly noteworthy recycling initiative is the "green-waste" composting scheme operated by the Scarborough Borough Council within the boundary of the Seamer Carr landfill site. Approximately 8,000 tonnes of waste vegetation from both public and private sector sources together with garden waste from household sources is composted and re-used, annually.

#### Special waste

Over 80 tonnes per annum of special waste is generated in the Derwent area from nine industrial manufacturing sites. The predominant types of special waste produced in the area are:- fibrous asbestos, non-chlorinated solvents and fine organic chemicals. In addition, a further 50 tonnes per annum of special waste arises from a number of "one off" situations. This waste varies in nature, ranging from a consignment of sawdust heavily contaminated with wood preservative, to the debris from a fire at an organic dye-stuffs wholesalers.

The vast majority of special waste produced in the area, both routinely and on an irregular basis, is disposed of at local landfills. These landfills also accept special waste imported from production sources in neighbouring areas. In 1995/6 a total of 47 shipments, totalling 50 tonnes of special waste were notified and recorded. A notable exception to this pattern exists in the case of non-chlorinated waste generated by the automobile and print industries, which are collected by the original suppliers and amassed into solvents for return to the manufacturer. The nature of the imported special waste materials is not dissimilar to those produced in the area. An exception is a regular consignment of effluent treatment plant filter cake containing heavy metals.

The production of special waste in the area is several times lower than the national average making it a relatively minor waste management issue in terms of quantity and hazardous nature. The position has been largely static for a number of years and with no change foreseen to the industrial base of the area, it is expected to remain constant for the immediate future.

#### Brighton Airfield

The former Brighton airfield is located some 200 metres south-east of the village of Bubwith immediately north-east of Brighton village itself. The site covers some 197

hectares, across an old flood plain of the River Derwent. The eastern portion of the airfield has been used for waste disposal activities, both legally and illegally for a number of years.

Over 750,000 waste tyres have been deposited on the airfield by various individuals and organisations, some of whom have prosecuted. Additionally there is licensed storage capacity for shredded tyres equivalent to an estimated 2,015,000 car tyres.

Several fires have occurred amongst the tyres. The possibility of further fires is a cause for concern.

In April 1994 planning permission was granted by Humberside County Council to use the illegally deposited tyres as part of a landscaping bund that would screen an industrial activity. This scheme has only partially been completed (see issue 24)

## 5.2.2 EFFLUENT DISPOSAL

### Background

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

The Agency's powers to regulate the disposal of effluent to controlled waters are contained in the Environment Act 1995, the Water Resources Act 1991 and the Environmental Protection Act 1990. Under this legislation the Agency issues consents and authorisations:- legal documents which impose conditions on the quantity and quality of a discharge in order to protect the environment. The Agency has powers to monitor both the quantity and quality of these discharges and, if the conditions are not being met, to take enforcement action to ensure compliance.

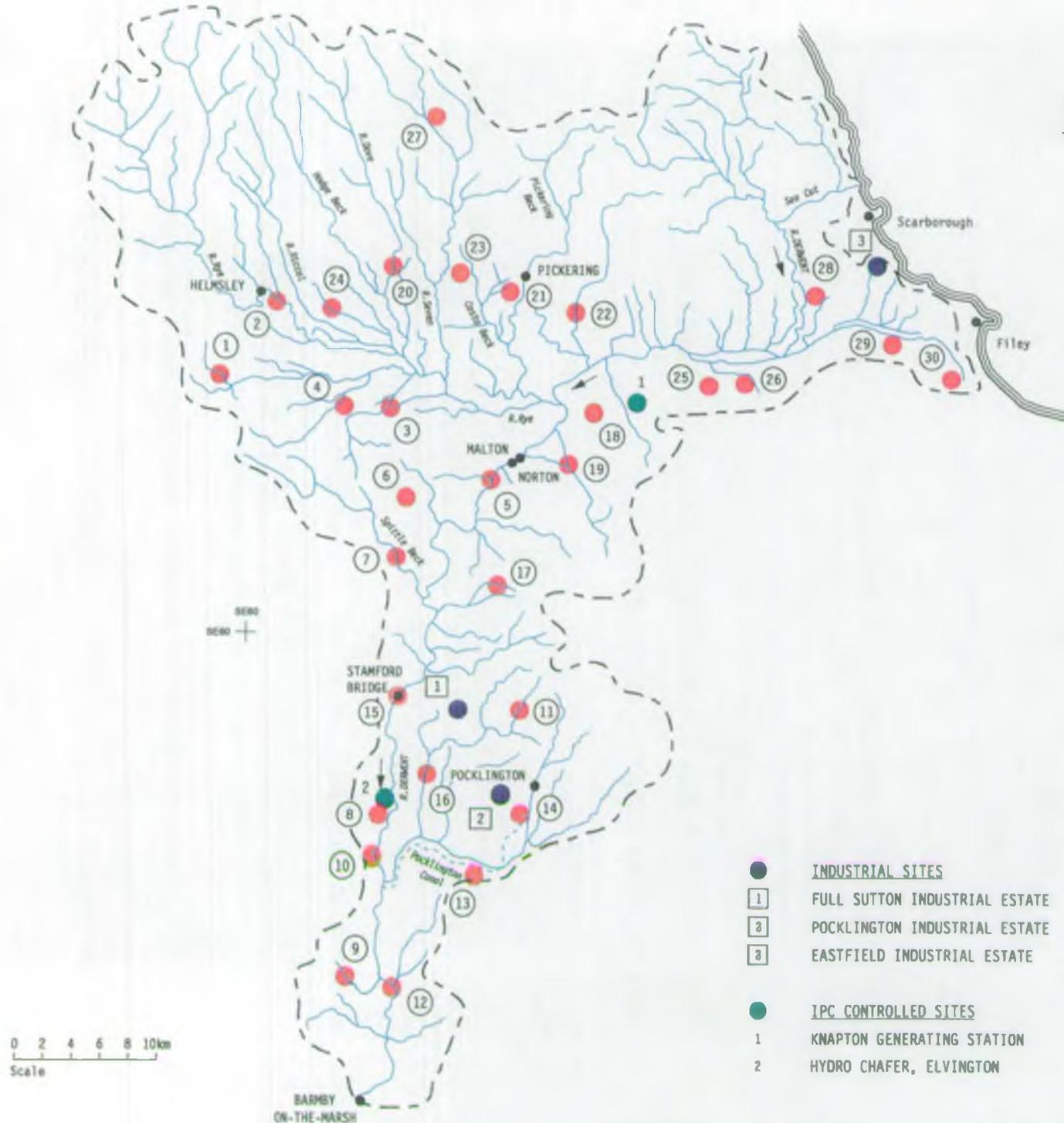
### Local Perspective

In the Derwent area there are 360 consented discharges of sewage and industrial effluents. The vast majority of these are not significant as the discharge is less than 5 cubic metres per day. Table 3 shows the number of significant discharges by type.

### Sewage Effluent

Of the 29 Sewage Works owned and run by Yorkshire Water in the Derwent area the majority are small rural works discharging relatively low volumes of treated effluent and have no impact on water quality. However even small discharges of sewage effluent can give rise to water quality problems if there is insufficient dilution in the receiving

# DERWENT AREA SEWAGE TREATMENT WORKS AND IPC SITES



### SEWAGE TREATMENT WORKS

- 1 AMPLEFORTH
- 8 HELMSLEY
- 3 SLINGSBY
- 4 HOVINGHAM
- 5 MALTON
- 6 WELBURN
- 7 FOSTON
- 8 ELVINGTON
- 9 NORTH DUFFIELD
- 10 WHELDRAKE
- 11 BISHOP WILTON
- 19 BUBWITH
- 13 MELBOURNE
- 14 POCKLINGTON
- 15 STAMFORD BRIDGE
- 16 WILBERFOSS
- 17 LEAVENING
- 28 RILLINGTON
- 19 SETTRINGTON
- 20 KIRKBYMOORSIDE
- 21 PICKERING
- 22 THORNTON DALE
- 23 SINNINGTON
- 24 HAROME
- 25 EAST HESLERTON
- 26 SHERBURN
- 27 ROSEDALE ABBEY
- 28 SEAMER
- 29 FOLKTON
- 30 HUNMANBY

### INDUSTRIAL SITES

- 1 FULL SUTTON INDUSTRIAL ESTATE
- 3 POCKLINGTON INDUSTRIAL ESTATE
- 3 EASTFIELD INDUSTRIAL ESTATE

### IPC CONTROLLED SITES

- 1 KNAPTON GENERATING STATION
- 2 HYDRO CHAFER, ELVINGTON

Figure 8

watercourse, such as in the River Hertford below Seamer, Hunmanby and Folkton sewage works.

The largest sewage works in the area is at Malton, which discharges up to 5000 cubic metres a day, and on its own changes the class of the River Derwent.

**Table 3: Significant discharges in the Derwent area**

DISCHARGE	NUMBER
Yorkshire Water Sewage Works	29
Private Sewage Works	11
Industrial Effluent	9
Fish Farms	9

#### Industrial Effluent

Of the 9 Industrial Effluent discharges in the area the most significant are Knapton Maltings and East Riding Farm Produce at Melbourne. These, and most of the other, discharges are products of the food industry, none of them have any significant impact on water quality.

### **5.3 SURFACE WATER AND GROUNDWATER ABSTRACTION**

#### **5.3.1 SURFACE WATER ABSTRACTION**

##### **Background**

One of the prime uses of the area is to support the abstraction of water from ground water sources and rivers for potable supply and other uses. All abstractions are controlled by licences which stipulate the total daily and annual quantities authorised for abstraction. Conditions are required to ensure a minimum flow in the river to protect downstream abstractions, other uses and the quality of the water environment.

##### **Local Perspective**

Surface water abstractions in the upper Derwent are relatively small in comparison to the lower Derwent. Major abstractors are fish farms which return the vast majority of the water to watercourses.

There were 237 licensed surface water abstractions within the area as of September 1996 of which 27 were subject to environmental prescribed river flows. These flows were derived in accordance with the Howard Humphreys Report "Management of River Abstraction in North Yorkshire" and are set at river gauging stations throughout the area. When a river level falls to or below the environmental prescribed flow the abstractor is notified to stop abstracting by the Agency. Compliance by abstractors is then monitored by the Agency. A new Surface Water Abstraction Licensing Policy (SWALP) has been developed and adopted as a policy in the North East Region. As such, it has replaced the previous policy prepared by Howard Humphrey's and will be used to determine future surface water abstraction licence applications.

Licensed abstraction quantities within the area have remained fairly constant over the last 10 years. The variation within this period has been due to new licences for fish farms which involve no net loss to the system.

There are 18 spray irrigation licences related to prescribed flow at Buttercrambe Gauging Station near Stamford Bridge. During the last few drought years, including 1995 and 1996, the flow fell below the prescribed level and the spray irrigators were instructed to stop abstracting. The major abstractions on the lower Derwent are by YWS, at Elvington and Barmby. The water from these treatment works is supplied into the Yorkshire Water Grid and can be used to meet demand from Leeds, Sheffield, Wakefield and Hull.

A new pipeline has been built from Moor Monkton on the Ouse to Elvington Treatment Works on the River Derwent. Yorkshire Water will be able to transfer water from the River Ouse to Elvington Treatment Works and then to South and West Yorkshire under its licence conditions.

### 5.3.2 GROUNDWATER SUPPLY AND PROTECTION

#### Background

This use of the area relates to the abstraction of water from groundwater sources such as wells and boreholes from the underground rocks called aquifers for both potable and industrial supply. Management of groundwater resources is achieved through abstraction licences, which specify the quantities of water that may be abstracted. Licences may include conditions which are designed to protect aquifers from over-abstraction.

In general, groundwater has a high standard of quality both microbiologically and chemically and usually requires little treatment. Groundwater is vulnerable to many activities which can cause pollution through the underground seepage of polluting material. Once underground water is polluted it is extremely difficult and costly to clean. The slow movement of groundwater also means that it takes a long time for pollution to be manifested.

# DERWENT AREA SURFACE WATER ABSTRACTIONS 1995-96

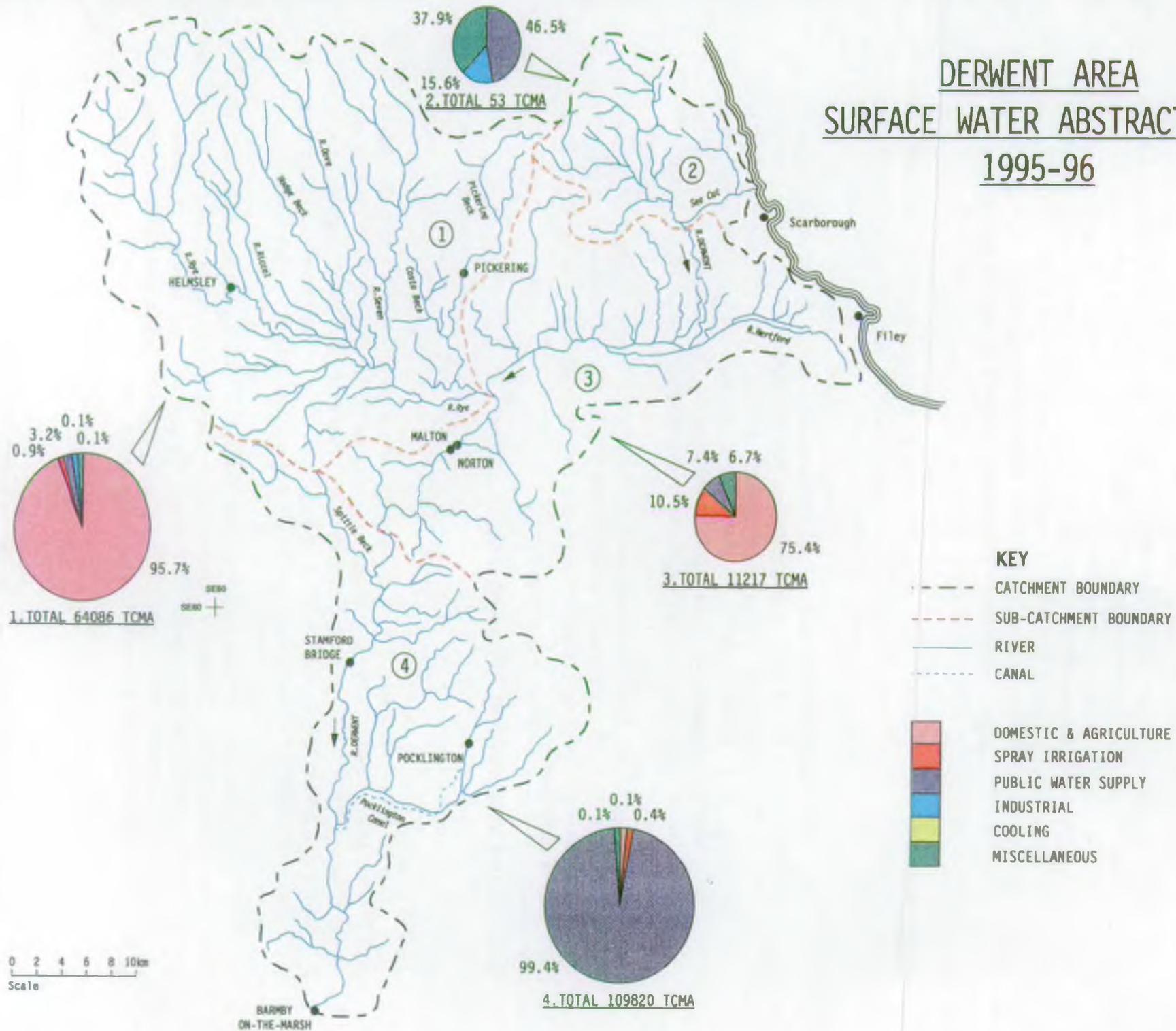


Figure 9

# DERWENT AREA GROUNDWATER ABSTRACTIONS 1995-96

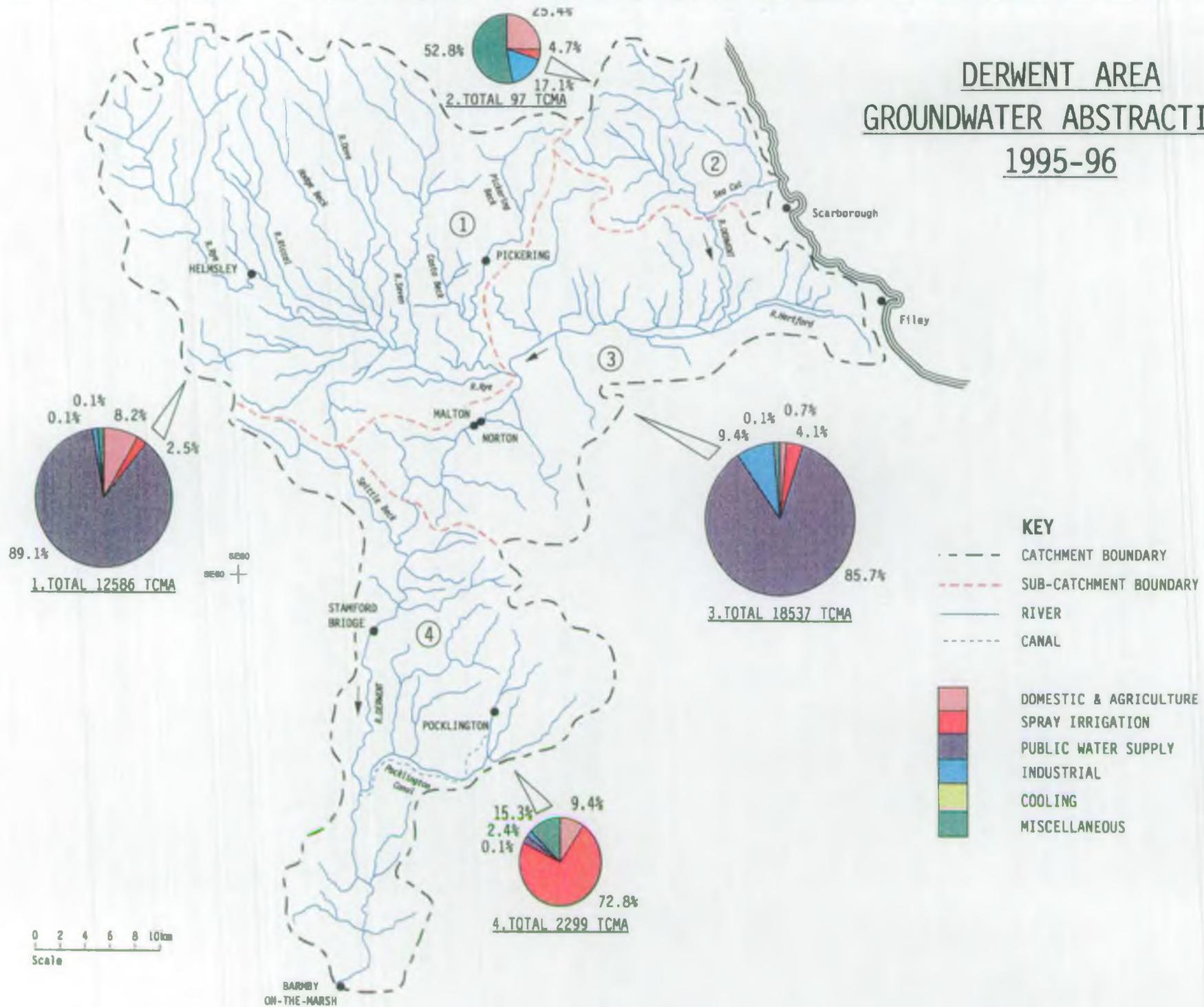


Figure 10

### Local Perspective

In the Derwent area, groundwater is abstracted for potable supply, spray irrigation, industrial, domestic and agricultural uses.

The major groundwater supplies are from the Corallian aquifers in the Vale of Pickering, most of the supply being from boreholes, some of which are situated on spring heads. This water supplies the Vale of Pickering with drinking water.

In the eastern part of the Vale of Pickering the Corallian Limestone aquifer is supplemented by recharge from swallow holes in the bed of the River Derwent above East and West Ayton. At times of low flow this results in the River Derwent becoming dry at East and West Ayton. The water reappears in the Yorkshire Water Irton public water supply borehole. The travel time from these swallow holes to the abstraction source, approximately 2km away, is 4 hours. This section of the river has been identified as one of the top 40 low flow sites in England and Wales by the Agency. Consultants have produced a mathematical model of the area and suggested various options to alleviate low flows. One of the options is being tested in autumn 1996 and if successful will be implemented in 1997/8.

Karstic flow also occurs in the western half of the Vale of Pickering but here most of the groundwater abstraction does not seem to be influenced by river flows.

Where the River Rye cuts through the Corallian Limestone aquifer at Duncombe Park, near Helmsley, water is lost through swallow holes and then reappears at Rye House Springs. As a result during low flows and drought periods certain sections of the River Rye through Helmsley dry up.

A brick wall approximately 0.2m high has been built on the bed of the river for a short distance to contain the water at low flows in a narrow channel. This was intended to reduce water loss through the swallow holes and preserve river flows. At present certain sections of this wall are broken and allow the water to leave the narrow channel during low flows. Southern Science Ltd carried out an investigation followed by an environmental scoping study in 1996. Further work may be required to quantify the loss of water to Rye House springs by temporarily blocking swallow holes.

The "Policy and Practice for the Protection of Groundwater" has been published and is being implemented within the Region. It provides guidelines and measurements which the Agency will take to protect the quality and quantity of groundwater abstraction from boreholes and aquifers.

The policy classifies aquifers into major aquifers such as the Cretaceous Chalk, Corallian Limestone and the Sherwood Sandstone and minor aquifers or non-aquifers such as the

Kimmeridge Clay. The vulnerability of the aquifer to pollution is assessed from the type and thickness of the soil and the drift cover. Groundwater protection zones will consist of inner, outer, and entire catchment zones and will be based on the travel time of a pollutant to an abstraction source. These zones will be published and most of the controls will be achieved through planning consultations. The document contains guidelines indicating the Agency's likely response to potentially polluting activities within the various protection zones. These activities include, waste disposal to land, application of waste disposal to land in the area is not vast. The imposition of full containment and positive leachate collection is practised to eliminate the risks to groundwater sources. Over recent years water samples from the Corallian Limestone show evidence of rising nitrate levels. A groundwater quality monitoring network has been developed on the Corallian Limestone to monitor the situation. The Agency will seek to influence sewerage undertakers, farmers and planning authorities on the location, quantity and timing of applications of sludges/slurries and fertilizers to land in order to prevent pollution of groundwater resources.

There are two main domestic waste disposal sites, one at Seamer Carr and the other at Cauklands. These sites are monitored to ensure they do not have a detrimental impact on water quality.

#### 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 10% chance in any one year.

When watercourses flood, 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 passing downstream of flood water. This capacity is reduced if significant areas of floodplain have been raised, embanked, or built upon. This loss of storage volume can lead to higher river levels elsewhere and for this reason it is not possible (or desirable) to alleviate flooding in all areas. The priority for flood alleviation lies in urban areas as undeveloped floodplains should be allowed to play their natural role as the continuity between the river and its floodplain is an essential part of the water cycle.

# DERWENT AREA WASHLANDS & MAIN RIVER

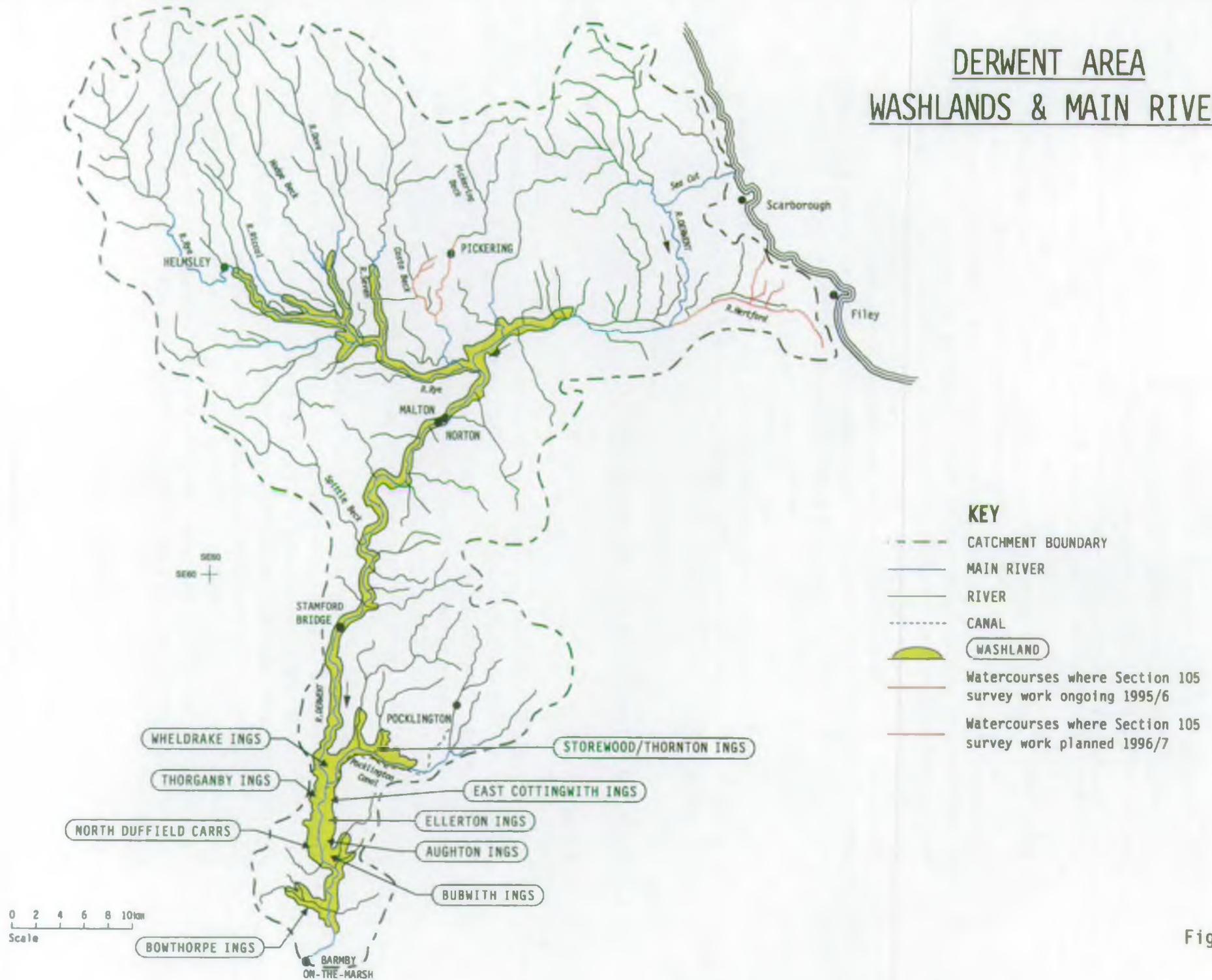


Figure 11

# DERWENT AREA INTERNAL DRAINAGE BOARDS

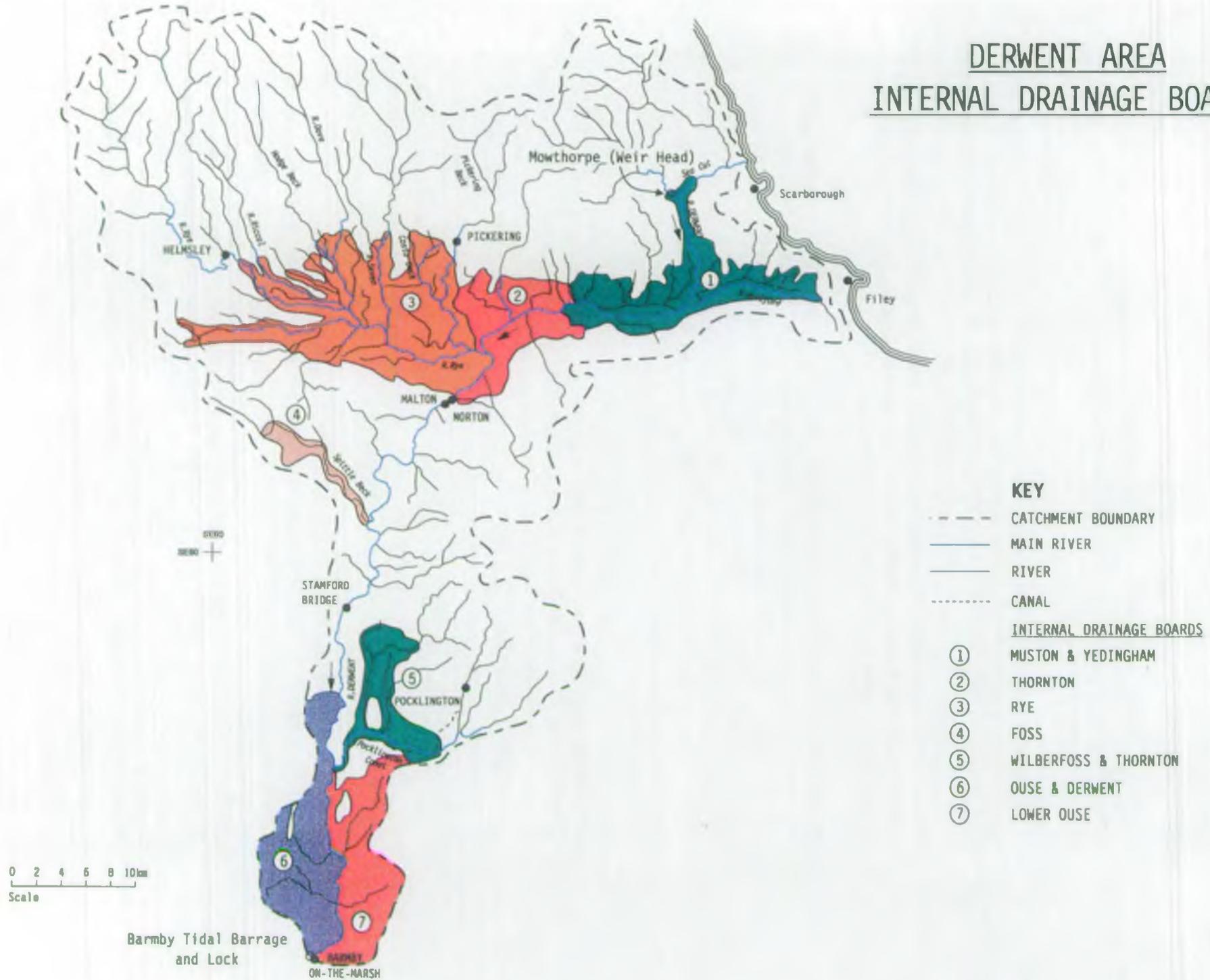


Figure 12

### Local Perspective

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

The upper River Derwent and its tributaries drain approximately two thirds of the plan area. These tributaries consist of the Rivers Rye, Hertford, Riccall, Dove, Seven, Hodge Beck, Pickering Beck, Wath Beck and Holbeck which meet the River Derwent just to the north of Malton. Most of the main rivers have flood embankments on one or both banks which provide flood protection to the adjacent arable farmland. These flood banks can be over-topped in major flood conditions and as a result extensive flood plains exist on these tributaries where floodwater can be stored.

An unusual feature of the River Derwent is the Sea Cut, a man-made channel constructed in the 19th Century which runs eastward from the Derwent at Mowthorpe to Scalby north of Scarborough. A sluice has been constructed at the western end of the Sea Cut which allows normal flows to pass down the River Derwent. During flood conditions, flood waters are restricted by the sluice which only allows a limited quantity of water to pass into the Derwent. The majority of the flood water from the North York Moors is diverted down the Sea Cut and into the North Sea. The Agency owns the Sea Cut and its associated structures.

In the middle reaches, downstream of Malton, the river flows through a very steep sided valley in which there are no flood defences. Below Stamford Bridge the river flows into the Vale of York; here the river has a much wider natural flood plain which has been embanked over many years. This has resulted in numerous washland areas being formed which have helped to reduce flood levels downstream.

Downstream of Elvington the river has been contained within flood banks which have been constructed on both sides of the river. These banks provide protection to land within the river valley and washlands for flood storage.

Between Wheldrake Ings and Bubwith Bridge large areas of land adjacent to the river on both banks are subject to flooding especially during the winter months. This has resulted in the areas being used by a variety of winter migrating birds and it has become such a valuable site with its diversity of flora and fauna that it has been designated as an SSSI, National Nature Reserve, Ramsar Site and a Special Protection Area (SPA). The flood embankment on this stretch of river is owned by the Agency and is let for grazing on an annual basis to local farmers. The method of grazing has been of some concern to English Nature because the area falls within the Lower Derwent SSSI. English Nature have proposed a management agreement which will allow them to direct the way the embankments are grazed. Preliminary discussions have already taken place and a formal

agreement is expected shortly.

The Barmby Tidal Barrage and lock at the confluence of the Derwent and Ouse operate, in part, as a flood control structure and part as a water resources facility to maintain a constant water level on the Derwent for water abstraction purposes. This constant water level provides a source for potable water abstraction at Yorkshire Water's Barmby Water Treatment Works and allows boats to navigate the lower reach of the river at all times and states of the tide.

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

During exceptionally high tidal surge conditions it may be necessary to open the barrage to let the tide enter the lower reaches of the Derwent. This action reduces the peak surge tide levels which could be expected at Selby, thereby giving flood protection to the town. The power to open the barrage for this purpose is contained within the Barmby Tidal Barrage Act of 1976.

### 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 river includes all watercourses which contribute significantly to a catchment's drainage though ordinary watercourses may be more significant locally. The legislation dealing with main river is The Water Resources Act 1991 and is supplemented by local Byelaws. The Agency supervises all flood defence matters but has special powers to carry out or control work on main rivers and sea defences.

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

Within the LEAP area there are seven Internal Drainage Boards, illustrated on Figure 12.

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.

Proposed revisions to main river are dealt with through a consultation and advertising process with the decision whether to designate river as a main river being made by MAFF.

The extent of the 'main river' and the locations of significant washlands within the Derwent area are shown on Figure 11.

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

It is preferable to avoid increased risk from flooding through control of development than to carry out works to alleviate problems once they occur. The relevant authority for controlling development in the flood plain is not the Agency but the local planning authority through the Town and Country Planning process.

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

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

Within the Derwent area the watercourses currently identified for investigation under Section 105 include Pickering Beck, Costa Beck, Oxfolds Beck and Martins Ravine. Consultants have been appointed and they will report to the Agency with recommendations by the end of March 1997.

#### *Water Level Management Plans*

Recent guidance has been issued by the government on the preparation of Water Level Management Plans for Sites of Special Scientific Interest or other areas of high ecological or landscape importance. Where the Agency is the operating authority, we will liaise

with English Nature to prepare a plan to ensure appropriate key water levels are safeguarded.

Four SSSI's and two non-SSSI's in the Derwent area have been identified as requiring Water Level Management Plans (WLMP's) in order to provide a means by which the water level requirements for a range of activities in a particular area, including agriculture, flood defence and conservation can be balanced and integrated. For all SSSI's: Lower Derwent Valley (including the River Derwent), Melbourne and Thornton Ings, Kirkham Park and Riverside, Raincliffe and Forge Valley Woods, an Interim Management Statement (IMS) has been produced, the precursor of the full WLMP's which are due end of 1998.

For the two non-SSSI's, Costa Beck and the River Hertford, the IMS will be produced by the end of 1997 and the full WLMP's will be due at the end of 1998.

### 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 predecessor organisations have constructed a significant number of gates, weirs, pumping stations and other such structures to complement river channel improvements.

#### *Privately Owned Structures*

Privately owned structures are common on watercourses, for a variety of traditional water uses such as operation of mills, creation of navigation channels and fish farming and amenity. By law these must be maintained and operated properly by their owners if they affect river levels and flows. The condition of privately owned structures can be of concern.

### Improvements

#### *Capital Works*

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

There are no major urban flood defence works on the River Derwent. To improve the

standards of flood protection a number of initiatives and schemes have been investigated. Flood protection schemes at Pickering, Malton/Norton, Sinnington and Stamford Bridge are under Consideration. There is a scheme to carry out repairs to Whitby Road Bridge (see issue 22). No other new flood defence work is planned within the area except to raise the flood bank to counteract mining subsidence from the Selby Coal Field development. The majority of this work will be confined to the stretch of river between Elvington and Barmby and will depend upon RJB's mining programme. Since the area of subsidence is within the Lower Derwent SSSI any scheme will require agreement from English Nature from a conservation perspective.

The Agency is in the process of improving the river level control structures at Kirkham and Stamford Bridge sluices. The aim is to provide power at each site to enable the Agency's Regional Telemetry System to control the sluices remotely from a central office. This will reduce resources currently required to manually operate the system. In addition, it will enable a much faster response time in operating the sluices, especially during floods and pollution incidents.

#### *Duty of Care for Conservation*

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

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

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

#### Flood Warning and Emergency Response

##### *Flood Warning Responsibilities*

The 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 according to laid down instructions. The telemetry

network is constantly being updated to provide a Regional Telemetry System (RTS) to serve the needs of different functions of the Agency. Data from the RTS is used by the River Flow Forecasting System (RFFS) 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 to high risk areas and to closely define the extent of potential flooding. Localities protected by flood alleviation works, but at risk from an exceptional flood overtopping the defences, will also be incorporated into the flood warning procedures.

During flood events the Agency currently relies on manual readings of gauge boards to monitor river levels at Stamford Bridge. Consideration is being given to improving the system to allow remote monitoring with the RTS.

From September 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 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 the area. In addition to providing flooding alerts and information to the public and media the Agency issues flood warnings to the Emergency Services and Local Authorities and police. The Police co-ordinate the response in major emergencies and along with the fire and rescue service they provide help during the evacuation of properties. The following areas within the area are covered by flood warnings:

Malton and Old Malton, Norton, Stamford Bridge, Railtrack for the York - Scarborough line, Nunnington, Butterwick, Elvington and roads in the valleys of the Seven, Costa Beck and Rye.

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.

### *Flood Warning Standards of Service*

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

### *Emergency Response*

At times of high water levels, in addition to our flood warning role, the Agency patrols the defences, operates flood defence structures, removes blockages and carries out any emergency repairs needed.

There are several operations undertaken by the Agency during flood conditions. The headwaters of the Derwent can be diverted down Sea Cut. This can also be used to isolate the lower Derwent and the swallow holes at East Ayton from pollution events in the upper reaches of the river. At Kirkham Abbey, automatic gates maintain normal water levels. However, during flood events the gates are fully open to increase the rate of river flow through Malton. This has the effect of lowering the flood level. A system of automatic alarms are used to monitor flood levels on the River Derwent and if necessary alert the Agency to send emergency staff to operate both these gates and sluices at Weir Head Mowthorpe, Kirkham Abbey and Stamford Bridge.

Within the limits of Agency resources assistance is given to the emergency services to alleviate actual flooding problems by sandbagging or small scale pumping operations. During severe tidal flooding events, the Barmby Barrage is operated to help reduce flooding in the tidal reaches of the Ouse, particularly when Selby is at risk.

District councils have permissive powers to offer assistance during floods. This may include placing sandbags, moving possessions, evacuating people. Each Council has its policy on the type and amount of help provided.

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

The County Council 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 in more serious flood events. Public surface water sewage systems are the responsibility of the local Water Company, who may sometimes use District Councils as their agents.

## 5.5 RECREATION AND AMENITY

### 5.5.1 ANGLING

#### Background

The Derwent is popular for angling throughout much of its course between Barns Cliff, above Langdale End, and its confluence with the Ouse at Barmby. The River Derwent and its major tributaries the Rye, Dove, Seven, and the Pickering and Costa Beck offer a variety of fishing in attractive surroundings.

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

#### Local Perspective

Fly fishing, for brown trout and winter grayling, takes place on the River Derwent as far downstream as East and West Ayton. Whilst part of the trout stream is retained exclusively for members of Derwent Anglers' Club, day tickets are available to the public on much of the river from Hackness through Forge Valley. Although trout and mixed coarse fishing are permitted on some of the larger tributaries of the River Derwent, a considerable proportion of the fishing rights on smaller tributaries remain in club or private hands.

Sea-trout fishing occurs on Scalby Beck and the Sea Cut. This is one of the few stretches of the upper Derwent river system where the Agency owns fishing rights. In the lower Derwent the Agency owns stretches of the river at Barmby Barrage. Fishing is free and specially designed fishing platforms which allow wheelchair access have been erected.

Although the fishery on the Derwent remains mixed for much of its length, coarse species gradually predominate downstream of Ayton. Between East and West Ayton and the River Rye the Derwent becomes less appealing to anglers with many preferring the more natural stretches of the river. Day permits are available on this stretch and catches are reported to have improved.

Downstream of Malton, the Derwent attracts mainly coarse fishermen, either as individuals or match anglers. Use of the river for weekend competition is mainly controlled by amalgamations of angling clubs. The York and District and the Leeds Amalgamated Society of Anglers have secured rights on the principal match fishing lengths, although, facilities for individual anglers are generally available on a day ticket basis.

# DERWENT AREA ANGLING ACTIVITY



Figure 13

With the exclusion of tidal influences at Barmby Barrage, and consequential improvements in coarse fishery development, angling activities now extend almost the full length of the former tideway downstream from Elvington Weir at Sutton-upon-Derwent. Some migratory salmonids ascend the river, but catches are often not formally reported.

Despite the relatively remote nature of the Derwent, access for able-bodied anglers is generally satisfactory. The provision of access for disabled anglers however, is limited due to the nature of the river corridor and the river's proximity to roads. Car parking facilities, some of which are secured by the clubs themselves, accommodate all but the most popular matches. A recent survey by the Agency indicated that there are few difficulties with club-organised activities or associated facilities.

The potential for conflict between anglers and boat users increases below Stamford Bridge. Small craft, canoes and some larger boats have used the river upstream in isolated sections although this has been fairly limited. Whilst serious conflicts between boat users and anglers are rarely reported, a clear interpretation of the respective rights of all users of the Derwent would improve relations between user groups.

The Agency owns some of the riverbank along the former tideway downstream of Elvington Weir. Arrangements for access to the fishing associated with these stretches are made by the Agency under an agreement with an umbrella organisation, the Lower Derwent Fishery Committee, which represents a number of local angling clubs. The allocated lengths of bank are managed by the individual clubs for use by members, although some day tickets are available to non-members.

## 5.5.2 NAVIGATION AND WATER BASED ACTIVITY

### Background

The Navigation powers of the Agency are set out in the Water Resources Act 1991. This calls on the Agency, wherever possible, to improve navigation together with the duty to maintain and protect it for public use.

The Agency has a statutory duty to maintain its locks for safe use by the public. The Agency periodically inspect and survey the structural and operational integrity of these and undertake necessary repair work and, where possible, improvements

Public rights of navigation over non-tidal waters can be acquired by immemorial use, by express grant of the riparian owner or by statute. The Agency has powers under the Water Resources Act 1991 to make byelaws and charges to regulate the use of waterways over which there is public right of navigation but where there is no effective navigation authority.

### **Local Perspective**

There are two types of navigable waterway within the Derwent area, navigable river and canal. There is no navigation authority responsible for the general control of boating activities, craft speed regulation, or safety, for the publicly navigable parts of the lower River Derwent. The lower Derwent is considered a significant recreational resource by boat owners, although in practice the level of boat use is low. British Waterways is responsible for the Pocklington Canal.

### **River Derwent**

In 1702 an Act of Parliament created a statutory private right of navigation upstream to Yedingham, and permitted the construction of locks to enable through navigation past existing weirs on the river.

The 1702 Act was revoked by the River Derwent Navigation Act Revocation Order 1935 and subsequent litigation recently established that no statutory public right to navigate the Derwent or its tributaries above Sutton-on-Derwent existed under the 1702 Act or the Highways Act 1980. However, Common Law claims that such rights may yet be raised. Unless otherwise shown, any rights to use of the river upstream of Sutton-on-Derwent for navigation are vested solely in the riparian owners, the individuals to whom the bed and banks of the river belong.

Despite the exclusion of the incoming tide from the reach of the lower river to Sutton-on-Derwent, due to the construction of the barrage at Barnby, a public right of navigation remains on this stretch of river.

Ownership and control of the old locks on the Derwent transferred from the undertakers of the Navigation to the River Ouse Yorkshire Catchment Board by the virtue of the 1935 Revocation Order and now rests with the Agency.

Although there is little known water-based activity in the upper Derwent catchment, canoeing is physically possible when conditions permit. However, growth of aquatic vegetation in summer restricts use of the Derwent itself between Yedingham and Malton.

A small number of craft are moored by arrangement with the riparian owners on the River Derwent at Malton. Owners of these boats, together with some canoeists, use the river between here and Kirkham Weir. Weirs at Howsham, Buttercrambe and Stamford Bridge also cross the river.

At Howsham Weir, use is made by canoeists of fast water through the slot in its crest, which allows the passage of fish. Although this use is permitted, unauthorised access to property adjacent is not. No competition rowing has been known on the Derwent, but

rowing boats are available for hire from the caravan site at Stamford Bridge.

Pleasure craft at permanent moorings to the bank immediately upstream of Sutton-on-Derwent road bridge are moored by arrangement with the landowner. Passage through the Agency's lock at Sutton-on-Derwent cannot be guaranteed, and is strictly conditional when permitted.

The majority of small powered craft on the Derwent moor in the vicinity of Loftsome Bridge and Brighton. The Agency-owned bank at Brighton is let to the local boat club, who are responsible for its management and moorings. Consents for the development of moorings within the area to allow increased numbers of craft, either on a temporary basis or otherwise, have not been given in recent years and would not be supported by the Agency. The existing moorings and other boating facilities, are in various ownerships and are not maintained to any consistent standard.

#### Pocklington Canal

The lower Derwent gives river access to the Pocklington Canal connecting the River Derwent at East Cottingwith to Canal Head near Pocklington. It has a maximum lock width of 14' 1" and a maximum length of 5' 9". At present only the lower end of the Canal is navigable from East Cottingwith to Thornton Lock. For British Waterways and other canal users it is important that the navigable condition of the lower Derwent between Barmby and Cottingwith is maintained.

The water supply to the Canal is from the Pocklington Beck at Canal Head, and Bielby Beck below Thornton Lock. In dry weather conditions these watercourses have limited resources. This limits the amount of traffic able to use the locks on the Canal.

The Pocklington Canal SSSI supports one of the most important aquatic plant communities in the Region. Much research has been undertaken into the effects of navigation on aquatic ecosystems. The results of the research indicate that renewed navigation on the upper sections of the canal could lead to severe ecological damage. Any proposal to restore the navigation within the SSSI would require prior consent from English Nature under the Wildlife and Countryside Act 1981.

The Canal is the subject of a Management Declaration signed between British Waterways and English Nature in September 1995 and a Water Level Management Plan being drawn up by British Waterways. The Agency is currently being consulted on these.

#### Control of Pollution from Boats

Under the Yorkshire Water Authority (River Derwent) Act 1976, the Agency administers a certification scheme for certain types of vessel on the river. Boat Certificates are

issued, in the interests of pollution control, to the owners of craft with inboard engines, outboard motors of 5 HP or more, and vessels with "sea" toilets (those capable of being discharged directly through the hull into the water).

These certificates are to ensure that potentially polluting craft conform to specifications that are unlikely to allow significant spillage of oil/fuel etc. into the River Derwent, a vital drinking water resource. All sea toilets on craft using the Derwent are sealed by the Agency. Toilet waste disposal facilities are provided and maintained by the Agency at Barmby, Sutton and Stamford Bridge. Portable/chemical type toilets from vessels can be emptied at these points.

A River Derwent Boat Certificate issued by the Agency is not a licence to navigate any part of the river.

The current level of water-based activity on the river permits its enjoyment without serious conflict between users. The Agency will rely on careful management, co-operation and moderation in use of the resource by all to maintain a manageable balance and the exceptional character of the Derwent and its environment.

## **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 has a general duty to promote: i) the conservation and enhancement of the natural beauty and amenity of inland waters and land associated with such waters; ii) conservation of flora and fauna which are dependent on the aquatic environment. In respect of all other functions other than pollution control, the Agency has a duty to further the conservation enhancement of natural beauty and conservation of flora fauna and geological or physiographical features of special interest. With regard to the pollution control functions, the duty to further is replaced by a duty to have regard to. The Agency is also required to consult with relevant statutory conservation agencies (English Nature) where the Agency's activities may effect land which is of "special" interest (e.g. SSSIs).

English Nature is the statutory adviser to the Government on nature conservation in England, 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.

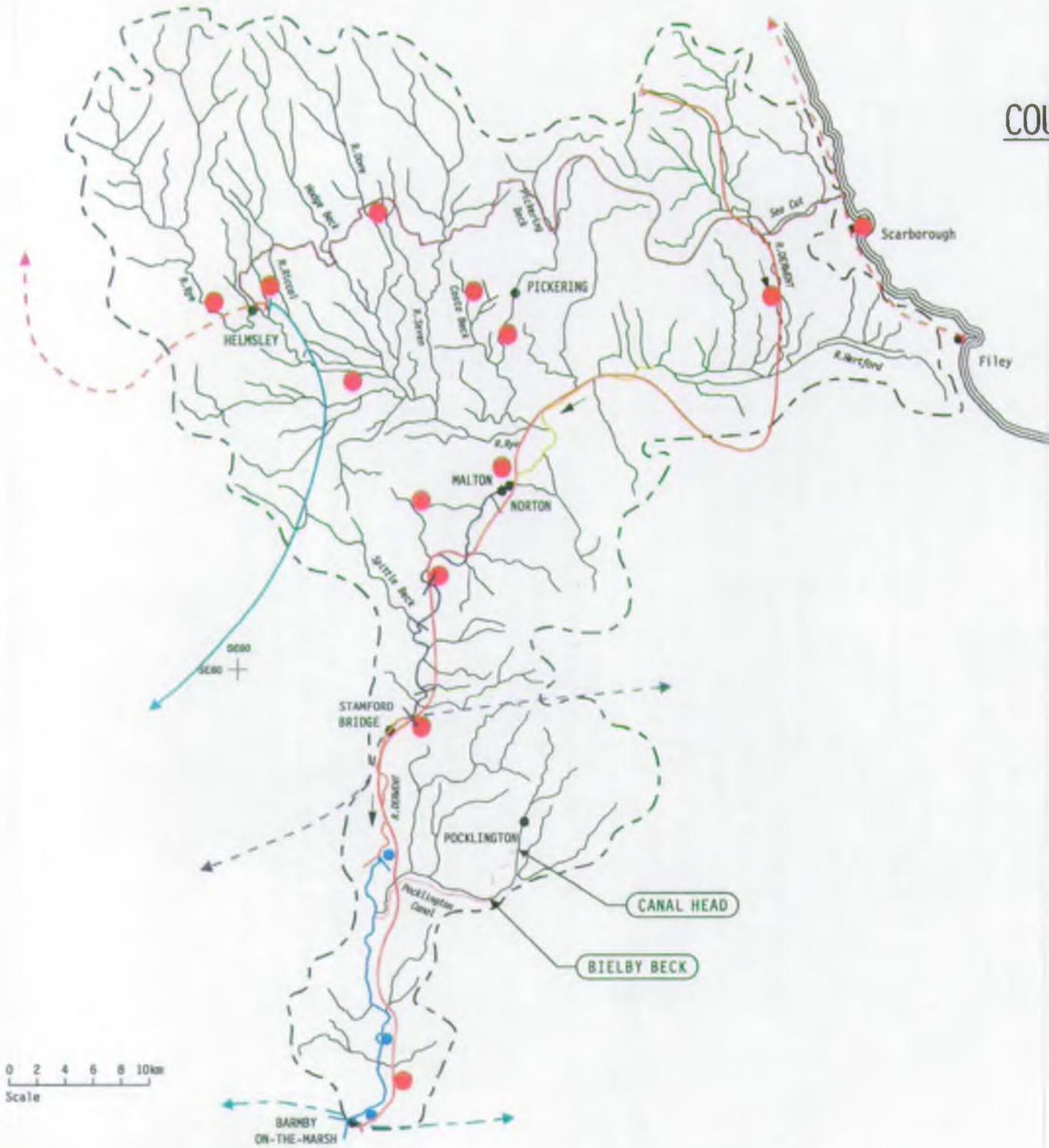
Sites of Special Scientific Interest are designated by English Nature in England because of their ecological, physiographical or geological characteristics and protected by the Wildlife and Countryside Act 1981. Those which meet the criteria as set out in the Habitats Directive may be designated SACs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

There are a number of international agreements and conventions to which the UK Government is a signatory. These include the Ramsar Convention (1971) on the conservation of wetlands of international importance; the World Heritage Convention (1975) on the protection of natural and cultural areas of "outstanding universal value"; and the Bonn Convention (1983) on the conservation of migratory species of wild animals. One of the most recent and important is the Rio Convention on Biological Diversity (1992), signed by the UK at the Rio Earth Summit 1992.

There are many non-statutory bodies which play a significant role in nature conservation. County Wildlife Trusts operate on a local basis, managing nature reserves, promoting conservation in the wider countryside and helping to identify and protect sites of conservation value at a county level. The Royal Society for the Protection of Birds (RSPB) plays an important role in wildlife conservation, establishing and managing reserves, conducting research, campaigning on issues of national significance 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 Ministry of Agriculture and Department of the Environment, provides guidance to farmers and landowners on the integration of wildlife conservation with farming practices.

Environmentally Sensitive Areas (ESAs) are designated by the Ministry of Agriculture, Fisheries and Food. The areas designated as ESAs are landscapes of a distinct topographical and/or landuse type which hold 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. MAFF also funds a range of other schemes under its agri-environment package, and has recently taken over the funding of the Countryside Stewardship scheme, previously administered by the Countryside Commission. The Stewardship Scheme has broadly similar aims to the ESA scheme, but is not run on a defined "boundary" basis and is targeted at a range of valued habitat and landscape types in the wider countryside; this includes a category of "Waterside Landscapes".

# DERWENT AREA COUNTRYSIDE RECREATION AND HERITAGE



## KEY

- - - - CATCHMENT BOUNDARY
- RIVER
- PRINCIPAL FEATURE OF HERITAGE INTEREST

## LONG DISTANCE FOOTPATHS

- DERWENT WAY
- - - CLEVELAND WAY
- - - MINSTER WAY
- EBOR WAY
- · - · TRANS PENNINE TRAIL
- TABULAR HILLS WALK

## BOATING

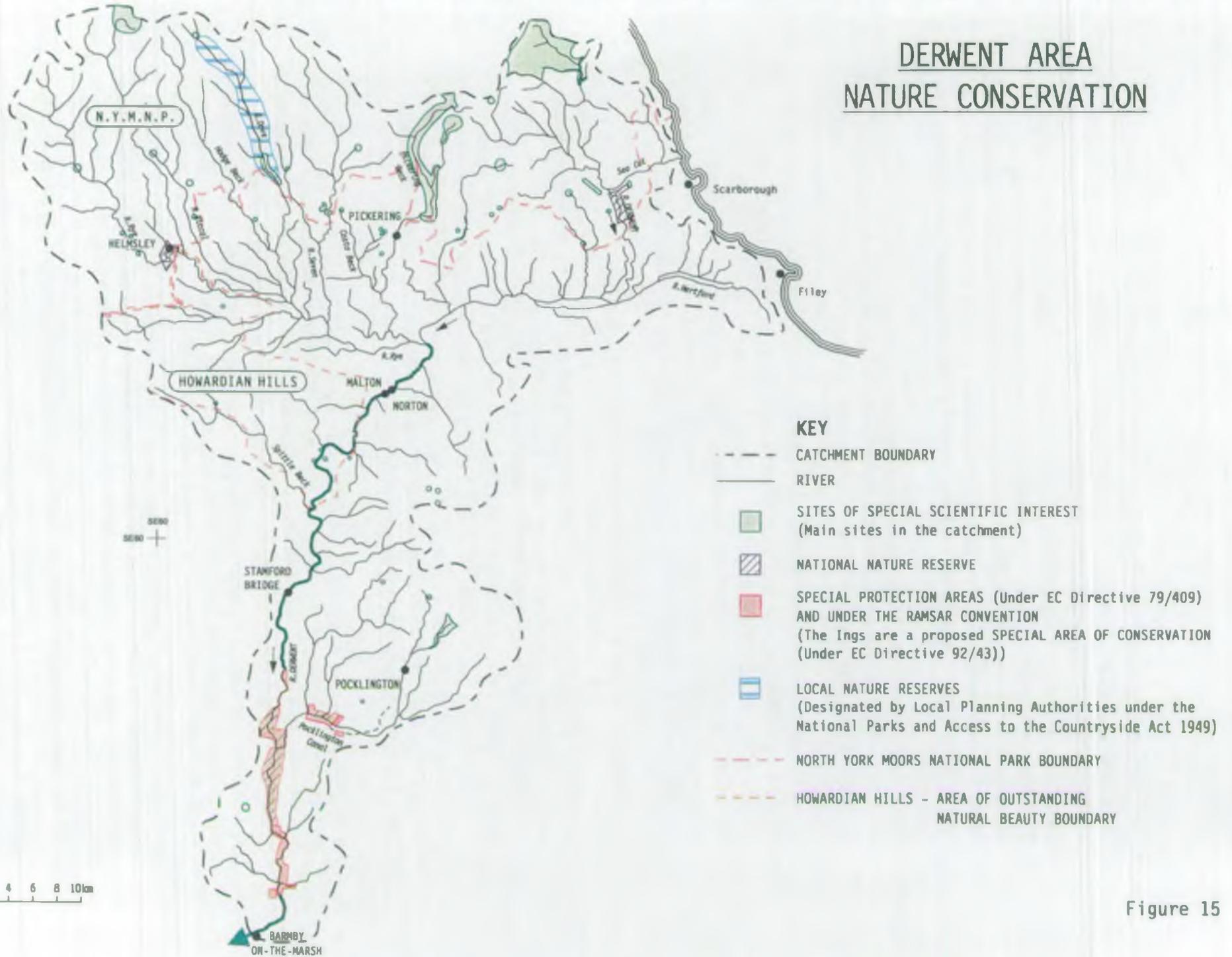
- THROUGH NAVIGATION - BARMBY LOCK TO SUTTON (Former tideway)
- SOME CRAFT THROUGH STAMFORD BRIDGE
- FEW BOATS
- NO POWERED CRAFT
- PRINCIPAL MOORINGS

## POCKLINGTON CANAL (British Waterways)

- NAVIGABLE
- - - UNRESTORED
- ← CANAL FEEDERS

Figure 14

# DERWENT AREA NATURE CONSERVATION



### Local Perspective

Detailed work has been undertaken to establish the conservation status of the lower River Derwent, particularly those areas which comprise the complex of designated sites. Elsewhere in the area, information is much less clearly defined and a major programme of surveys and data analysis is required. A survey of the chalk stream subcatchment is being undertaken to investigate land use, broad habitat types and aquatic invertebrates (see issue 4).

The vast majority of the River Derwent between the confluence of the River Rye and the River Ouse at Barmby is an SSSI. This stretch of river represents one of the best examples of a lowland river system in Britain. The lowland section of the river is relatively rich in nutrients and supports diverse and abundant aquatic plants which in turn support an outstanding assemblage of invertebrates. Many of the plant species are at the northern limit of their range in Britain. The lower section of the river is also noted for the diverse populations of both birds and fish. There is evidence of ecological changes in the lower part of the river, particularly in aquatic plant and invertebrate communities, possibly linked to the abstraction regime, which require further investigation.

The Derwent Ings are a complex of seasonally flooded meadows around the lower part of the river. They are of international importance for wildfowl and support wetland habitats of national importance. The Derwent Ings, along with the adjacent river and banks and most of the Pocklington Canal are covered by a number of conservation designations. The area includes SSSIs, a 400 hectares National Nature Reserve, a 1000 hectares Special Protection Area for wild birds and a wetland of international importance under the Ramsar Convention. These designations impose a range of requirements for the protection and management of the sites. The Agency owns considerable areas of land along the lower Derwent and has entered into a management agreement with English Nature in order to promote improved management.

The Pocklington Canal, an artificial watercourse connected to the River Derwent, falls within several SSSIs; the Pocklington Canal SSSI, Melbourne and Thornton SSSI and the Derwent Ings SSSI. The upper unrestored section of the canal lies in the Pocklington Canal SSSI, noted for the aquatic environment and tall fen plant communities which it supports. An extremely rich invertebrate community is dependent on these aquatic plants. Otters have also been recorded along the canal. Land around the canal is of national significance and forms an integral part of the canal and river corridor. Proposals for the resumption of navigation could have major impacts on the conservation significance of the canal and could have a potential impact on the lower Derwent. Any proposals to restore the navigation within the SSSIs would require the prior consent of English Nature under the Wildlife and Countryside Act. There is extensive literature on the impacts of navigation and an Agency R&D project is underway to examine the impacts of all forms of recreation on wildlife.

Upper sections of the River Derwent are less well known in terms of conservation status. However, there are a number of particular problems associated with over-engineering, low flows and pollution inputs. Forestry on some of the tributaries may also be a major influence. The scale of the impact of these problems on the conservation status of the river is poorly understood at present and requires additional investigation. The Agency is part funding a research project, being carried out at Newcastle University, which will improve our knowledge in this area.

The River Hertford has been degraded by a combination of poor water quality and over-engineering. The section of the River Derwent between Ryemouth and Yedingham has suffered severe ecological damage as a result of past engineering work. Both sections stand out within the area as being in need of considerable habitat rehabilitation and proposed habitat restoration.

Sections of the upper Derwent and the River Rye system support populations of native crayfish, protected under Schedule 5 of the Wildlife and Countryside Act. The River Derwent also supports a rich invertebrate fauna including nationally notable beetles *Gyrinus urinator*, *Hydaena rufipes*, *Riolus subvivoaecus*, mayfly *Heptagenia fuscogrisea*, caddis fly *Tinodes waeneri* and alder fly *Sialis nigripes* species as well as the saucer bug *Aphelocheirus aestivalis*.

Many of the headwater streams have a distinct and ecologically valuable fauna. Of particular note are the Corallian Limestone streams near Rievaulx which support diverse faunas, including species with a preference for small calcareous headwater streams. These include two nationally notable caddis fly species *Tinodes dives* and *Rhyacophila septentrionis*. Small streams draining the chalk Wolds may also be of value, the occurrence of a rare caddis fly, *Hydropsyche fulvipes* (Red Data Book - which is produced by the International Union for the Conservation of Nature) and *Rhyacophila septentrionis* are of particular note. The chalk streams have been subject of a Phase 1 Habitat Survey and aquatic invertebrate surveys will follow.

A number of the rivers 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 closely with the IDBs in order to assist with promoting more environmentally sensitive management practices.

The excavation of ponds and tapping of springs are particular problems in the National Park. These activities can lead to the loss of wetland habitats such as flushes and mires characteristic of upland vegetation communities as well as small stream habitat.

a local authority boundary basis rather than a LEAP area basis, this includes wastes collected and recycled outside of the area.

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

### Industrial and Commercial Waste

The amount of industrial and commercial waste generated in the area is quite low. In total less than 300,000 tonnes of industrial and commercial waste is disposed of within the area. Collectively the building, civil engineering, construction and demolition industries account, on average, for 90,000 tonnes per annum.

Construction waste is a priority waste stream and, as such, may be subjected to regulations similar to those shortly affecting the packaging industry.

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

### Special Waste

The predominant types of special waste produced in the area are fibrous asbestos, non-chlorinated solvents and fine organic chemicals. Typically 100-200 tonnes per annum are disposed of within the area. With the recent revision of the definition of special waste, encompassing wastes previously not regarded as such, the amount of such wastes generated is expected to increase.

### Household Waste Recycling and Composting

There are over 150 recycling sites in the catchment. The Council of Ryedale in particular 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 10% - very high for a rural area. The other rural Councils are expected to follow this lead.

Recent experimental trials of home composting in Ryedale and Selby have shown that they can significantly reduce the amount of wastes householders dispose of; 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.

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

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

#### **Local Perspective**

Archaeology is of considerable importance within the 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 National Park Plan.

English Heritage have produced a register of battlefields and another of parks and gardens of special historic interest. Of these there is one battlefield in the area, Stamford Bridge (1066), and a number of parks and gardens. These include Aldby Park, Gilling Castle, Castle Howard, Duncombe Park, Ebberston Hall, Nunnington Hall, Rievaulx Terraces and Scampston Hall.

The Lower Derwent Valley was the subject of a special study being included in the "Humber Wetlands 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 work .

### **5.6.3 FISHERIES**

#### **Background**

The Environment 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 Derwent area is illustrated in Figure 6. The Derwent and Rye generally support good trout fisheries in their upper reaches where the rivers are characterised by pools, riffles and gravel beds. In the lower reaches, where the rivers are characterised by slower flows, greater depths and siltier substrates, coarse fish predominate. The main concerns are within the area are the lengths of poor fishery quality on the River Derwent between Hertford and the River Rye, and on the River Hertford itself.

#### **River Hertford**

In 1974 the Land Drainage Department of the Yorkshire Water Authority carried out works on the River Hertford under contract to the Muston and Yedingham IDB. The works resulted in the channelisation of the river and caused considerable damage to the fishery and associated flora and fauna.

#### **River Hertford to Rye mouth**

Between 1950 and 1970 the former River Ouse Yorkshire Catchment Board carried out land drainage improvement work on the River Derwent between Ryemouth and Yedingham. Many of the natural river features such as bends, pools and variations in depth, as well as bankside vegetation, were lost. This work had a considerable impact on the fishery habitat and associated flora and fauna, the effects of which are still evident despite attempts to mitigate them. Fish populations are poor in comparison with their former levels and the brown trout which co-existed alongside stocks of dace, chub and grayling have virtually disappeared.

Two spawning units in the form of off-river ponds have been created in the section between Yedingham and Low Marishes in an attempt to improve coarse fish production. These sites also act as havens during periods of high flows. Whilst there is evidence that these have made some improvement, the fishery remains severely damaged.

As an environmentally conscious body, with a responsibility to maintain, improve and develop fisheries within its area, the Agency recognises that this section of the River Derwent has suffered severe environmental damage. The Agency will therefore undertake to carry out a full investigation into the feasibility of various options designed to help restore the fishery and its associated flora and fauna.

### Impounding weirs and fish passages

Brompton Beck on the upper Derwent should provide spawning and nursery sites for both brown trout and grayling. However, survey results indicate that recruitment from this source is very limited. In the mid-1970s a weir was built at the bottom of Brompton Beck for flow gauging. This structure effectively blocked the ascent of fish for spawning and thereby deprived the Derwent of valuable recruitment. The provision of some means of access over or around this obstruction needs to be considered.

There are six major impounding weirs at Kirkham Abbey, Howsham, Buttercrambe, Stamford Bridge, Forge Valley and Sutton-on-Derwent. The effects of impoundment is to produce very deep, relatively slow flowing areas of water upstream. These conditions promote the settlement of silt on the bed of the river. As a result the areas below the weirs are of vital importance to the maintenance of barbel, dace, chub and grayling as well as trout and the occasional salmon. These species require areas of clean, well-oxygenated gravels, formed and maintained in the weir pools by the increased velocities, for the deposition and successful development of their eggs. The weirs, whilst providing this essential element, also have the effect of limiting fish movements within the system.

Of the six weirs, Sutton-on-Derwent, Kirkham and Stamford Bridge have been fitted with fish passes and initial signs are that they are working well. However, the entrance to the Sutton-on-Derwent pass is badly positioned in relation to the main channel of the river. This results in fish failing to locate its presence. Repositioning of the entrance is required which may involve major structural changes to the pass.

### Migratory Trout

Scalby Beck contributes to the maintenance of the north east coast salmonid fishery. It provides the only substantial area of suitable sea trout spawning gravels between the River Esk, to the north, and the Humber, to the south. At present, the fish are only able to exploit the gravels in the lower 1,000m of the beck as their access is effectively blocked to areas upstream by a series of weirs. Provision for passage over these obstructions would open up considerable areas for sea trout reproduction including several kilometres of Burniston Beck.

### Elvington Water Treatment Works

Approximately 800m upstream of the weir at Sutton-on-Derwent, Yorkshire Water Service Ltd abstracts water for the Elvington Treatment Works. At present, no screening of the intake occurs to prevent the ingress of fish. A further study is required to identify the fry migration routes and timings under different flow regimes. This will enable entrainment losses into the Elvington abstraction to be quantified.

### Lower Derwent

Until the construction of the Barmby Barrage in 1975, the lower Derwent, from Sutton-on-Derwent to its confluence with the River Ouse, was affected by tidal fluctuations and saline intrusions. The barrage was designed to act as a flood defence mechanism and as a water resources facility to prevent the ingress of water from the River Ouse. It also had a considerable impact on the fishery of the lower Derwent. In general it led to a more ponded environment due to the significant reduction in flows. This is thought to have led to the decline in the dace and bleak catches, whilst the populations of roach and bream appeared to increase.

Recent surveys have identified important sites which act as over-wintering refuges for juvenile fish; these include Wheldrake Beck, the old course of the River Derwent at Wheldrake Ings, and Fleet Dyke. It is essential that these areas are protected and if possible improved. Further suitable sites for development as fish nursery and haven areas should be investigated.

The lower reaches of Bilby Beck, which joins the river at East Cottingwith contains a healthy coarse fish population. It is considered that the emigrant juvenile stock from this source help to augment the Derwent fishery. The downstream movement of brown trout in Bilby Beck is limited due to the effects of effluent discharge from Pocklington STW and intermittent pollution incidents.

At the time of its construction, only limited consideration was given to the effects of Barmby Barrage on the upward movement of migratory salmonids and eels. Access to the Derwent from the Ouse was felt to be adequately served by the regular operation of the gates which were opened at certain states of the tide to maintain levels inside the structure. The inadequacy of this regime in maintaining free access for fish became apparent during the recent drought when the barrage remained closed for several weeks to conserve water supplies. Passage to migrating fish was effectively denied and the continual flow of water required for salmonids to locate the entrance to the river was lost.

As part of the flow investigation on the lower Derwent further work is required to identify the factors which regulate fish populations in the lower river and in particular investigations are required into the effects of low flows due to abstraction. The investigations will also need to quantify the effects of entrainment and impingement losses to the intake at Barmby Water Treatment Works.

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## 6.1 INTRODUCTION

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

## 6.2 AIR

### 6.2.1 AIR QUALITY

#### Background

The geographical area covered by the Derwent area is predominantly rural and agricultural in nature. Air quality therefore is not generally affected by heavy industrial sources within the area, but is primarily affected by human activities, such as domestic fuel usage, road traffic etc. The impact of smaller industrial processes, regulated by local authorities, and which are typically situated on industrial estates throughout the area, cannot be neglected.

#### Monitoring Techniques

Air quality in the Derwent area is currently assessed by a combination of active and passive monitoring techniques. The passive techniques being the major protocol.

High Muffles monitoring station is part of the rural ozone monitoring network that employs continuous monitoring methods. The station is also a key player in the acid deposition monitoring network, collecting rain water samples for multi component analysis, e.g. nitric acid, sulphuric acid, ammonium ion etc.

Malton and Scarborough employ static absorption tube techniques to monitor NO<sub>2</sub> levels.

Similarly Malton and Scarborough test for smoke (filter technique) and SO<sub>2</sub> (gas absorption and titration technique) via passive protocols.

#### Current Status

##### Ozone

This gas is commonly known as the "sunshine pollutant" as it is formed as a result of the reaction between oxides of nitrogen (NO<sub>x</sub>), hydrocarbons and oxygen in sunlight. In the upper atmosphere ozone forms a barrier to harmful ultra-violet radiation. At ground level however it is a poisonous gas and a photochemical pollutant. As the most common photochemical oxidant, ozone is a good indicator of photochemical pollution in general.

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

World Health Organisation (WHO) air quality guidelines recommend that 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 Derwent area there are no urban area ozone measurement stations. There is, however, an automatic monitoring station at High Muffles for ozone which is part of the rural area monitoring network.

**Table 5: Ozone in the Derwent area**

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

**Table 6: Ozone and EPAQS**

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

#### Nitrogen Dioxide (NO<sub>2</sub>) and Nitrogen Oxides (NO<sub>x</sub>)

Oxides of nitrogen (NO<sub>x</sub>) are formed by a reaction between nitrogen and oxygen during combustion processes. The main sources are vehicular emissions followed by industrial sources. The gases are released as nitric oxide (NO) which is converted to the more toxic nitrogen dioxide (NO<sub>2</sub>) by the presence of sunlight. This may create a photochemical smog. The nitrogen dioxide is an irritant, with similar short term health effects as ozone, although little is known about the long term health effects of

exposure. Oxides of nitrogen can affect plant growth, contribute to acid rain and exacerbate tropospheric ozone levels. Nitrogen oxides are also greenhouse gases.

Little is known about the potential for long distance movement of the gases and the EC has defined them as "secondary transborder pollutants".

The emissions of NO<sub>x</sub> in 1990 were estimated as being 2.7 million tonnes, an increase in 0.5 million tonnes per year from 1985 emission information. The increase has been attributed to the increase in vehicular emissions and the latter source now accounts for nominally 60% of the total UK emissions. Emissions from power stations have declined substantially due to the introduction of cleaner technologies.

EC Directive 85/203 sets limits on NO<sub>2</sub> to protect human health at 200 ug/m<sup>3</sup> or 97.5 ppb (98 percentile of hourly averages). The WHO hourly guideline concentration is 110 ppb, with the daily guideline being 80 ppb and the annual guideline being 26 ppb. Guidelines to protect vegetation are 50 ppb for 4 hourly concentrations and 16 ppb for annual averages.

The proposed National Air Quality Strategy (Draft) Standards are 104.6ppb (1 hour mean) and 20ppb (annual mean) for NO<sub>2</sub>. There are no automatic NO<sub>2</sub> monitoring stations in the Derwent area although NO<sub>x</sub> diffusion tube surveys are performed by Ryedale District Council and Scarborough Borough Council.

**Table 7: Nitrogen Dioxide - Urban average**

Monitoring Location	Nitrogen Dioxide - annual average (ppb) (average urban background - diffusion tubes)		
	1992/3	1993/4	1994/5
Malton	-	9	13
Scarborough	13	15	14

Detection tubes located at road kerbsides did detect higher quantities of nitrogen dioxide.

**Table 8: Nitrogen Dioxide - Kerbside average**

Monitoring Location	Nitrogen Dioxide - annual average (ppb) (average road kerbside - diffusion tubes)		
	1992/3	1993/4	1994/5
Malton	-	21	31
Scarborough	30	34	31

**Volatile Organic Compounds (VOC)**

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

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

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

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

There is no air quality monitoring data available for VOC species in the Derwent area.

**Sulphur Dioxide (SO<sub>2</sub>) and Smoke**

Sulphur dioxide (SO<sub>2</sub>) 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 damage to trees, crops and buildings.

The major source of SO<sub>2</sub> 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<sub>2</sub> with oil burning processes and vehicles also contributing to the emissions.

The largest proportion of SO<sub>2</sub> comes from coal burned at power stations for electricity generation. However it should be noted that national SO<sub>2</sub> emissions have reduced by over 30% in the last 10 years, a reduction from 4,898,000 to 3,774,000 tonnes per year.

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 source particulates have almost doubled. Total emissions of smoke have declined by around 20% since 1980.

There has been a significant reduction in the SO<sub>2</sub> levels in the last 10 years. The annual reduction in levels has been between 15 and 50%. The vast reduction in SO<sub>2</sub> concentrations can be attributed to initiatives such as the creation of smokeless zones, the increase in the use of gas fired central heating systems, the reduction in the use of open coal fires and the reduction in the number of households receiving free or subsidised coal. There is a continuing programme of introducing smokeless zones in the area which are designated and enforced by District Councils.

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

The EPAQS have proposed an SO<sub>2</sub> limit of 100 ppb for a 15 minute period. The EC have 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.

**Table 9: Sulphur Dioxide - Annual average**

Monitoring Location	Sulphur Dioxide - annual average (ppb)		
	1992/3	1993/4	1994/5
Malton	3	3	1
Scarborough	8	5	5

The EC guide values (1982) for smoke particles are linked with sulphur dioxide levels. The lowest smoke particle level considered is 80 ug/m<sup>3</sup> as an annual average. WHO guidelines for black smoke are 50 ug/m<sup>3</sup> as an annual average and 125 ug/m<sup>3</sup> as a 24 hour average.

Table 10: Smoke - Annual average

Monitoring Location	Smoke - annual average (ug/m <sup>3</sup> )		
	1992/3	1993/4	1994/5
Malton	9	7	4
Scarborough	15	12	11

### Acid Deposition

This phenomenon is caused by airborne pollutants such as SO<sub>2</sub> and NO<sub>x</sub> which readily dissolve in rain water, forming weak sulphuric and nitric acid. The resultant rain water can be acidic in nature having a pH value of less than 4. It should be recognised that it is not only the concentration of acids which is important, but also the total rainfall at a site. Areas with the highest rainfall also tend to have the highest amounts of wet deposited acidity. Dry deposition involves the settling out of acidic particles from the air and can cause 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<sub>2</sub> 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<sub>2</sub> 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, for example deposition in the east of the Tees area could have originated from power stations at the southern tip of the Derwent area. The reason for long distance transportation of pollutants is a direct result of earlier pollution abatement actions following the Clean Air Act of 1952. It was thought that by using high chimney stacks, 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 the problem on the international agenda. Recent simulation modelling suggests that Europe will lose one sixth of its potential wood production from forests due to air pollution before 2005. Losses could be greater than this when the impact of soil erosion, flooding, habitat destruction and the loss to the carbon cycle are taken into consideration.

Acid deposition also affects water courses, both directly and through the increased acidity of run-off waters, and can have profound effects upon soils. Metals such as aluminium

can be leached from soils, progress into water courses and ultimately find its way into drinking water supplies. Other metals are also leached from soils together with many nutrients which can cause many problems for the long term health of the soil.

There is an acid deposition monitoring station, as part of the Acid Deposition Monitoring Network, at High Muffles.

**Table 11: Acid Rain Deposition**

Monitoring Location	Precipitation-annual mean sulphur content (ueq/s)			
	1992	1993	1994	1995
High Muffles	71	56	60	51

The information in Table 11 suggests that there is a downward trend in the sulphur content of the rain measured at High Muffles. However, a formal interpretation of trends of the last ten years monitoring data is in preparation as part of the formal publication of the 1995 Monitoring Network information.

### Lead

Lead has major health effects particularly on children. The National Society 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 to 25% of its 1980 level. Since 1986 lead free petrol has been made available at a cheaper price which has led to a reduction in lead emissions of almost 6,000 tonnes per annum.

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

Slight increases in lead levels have occurred in recent years, due 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. An annual mean lead limit of  $0.5\mu\text{g}/\text{m}^3$  is proposed within the draft National Air Quality Strategy.

### 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<sub>2</sub> and organic gases. Dusts of biological origin are derived from plant fragments, from wind blown soil particles and can 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 size, which determines the site of deposition in the respiratory tract. Epidemiological evidence suggests that adverse health effects of particulates of below 10 µm diameter (PM10) are causal.

EPAQS have proposed a PM10 limit of 50 µg/m<sup>3</sup> as a 24 hour rolling average. This is proposed in the draft National Air Quality Strategy.

PM10 monitoring is not performed within the Derwent area.

#### Industrial Monitoring by the Environment Agency.

The concept of Integrated Pollution Control (IPC) is one of self monitoring within the regulatory regime policed by the Agency. This means that the operator monitors the point source releases at an agreed frequency and using agreed methods of analysis. The results of the monitoring and an estimate of the annual releases are placed on numerous public registers. Inspectors check the operators monitoring protocols, sampling and analytical systems during site inspections. The Agency also perform independent monitoring to confirm the point source releases from the IPC processes. The results of the Agency monitoring activities are also placed on public registers.

Complex interactions between weather conditions, chemical processes, distances that air pollution can travel, and the number of possible sources make understanding causes and effects 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. Specific levels for a 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 should therefore trigger a mandatory obligation on the relevant pollution control authorities, including the Agency, to take remedial action. The limit values have been proposed in draft within the National Air Quality Strategy documentation.

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

### Integrated Pollution Prevention and Control

A European Directive on Integrated Pollution Prevention and Control (IPPC) has recently been passed. This will be brought into United Kingdom legislation. The IPPC Directive covers an industry base that is, in general, an extension to that covered by the Environmental Protection Act 1990. Certain farming practices e.g. intensive rearing of poultry or pigs are mentioned in the Directive. The impact of the Directive within the Derwent area requires assessing (see issue 17).

## 6.3 WASTE

### 6.3.1 WASTE DISPOSAL

#### Background

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

#### 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 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;
- lightweighting 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 per cent 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.

### Industrial and Commercial Waste

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

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

### Special Waste

Special waste arisings account for less than 1% of the total waste stream and arise as by-products of industrial processes or 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.

### 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 and 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 standalone facilities for 3 or 4 materials within 1/2 mile, or within 2 miles where the recycling facility is located with other frequently used facilities.

### 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.

### Energy from Waste

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

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

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 going to landfill

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

### **Current Status**

#### Household Waste

In the last financial year the six largest local authorities collected over 190,000 tonnes of household waste and recycled just over 5.6% of this. As household waste is collected on

a local authority boundary basis rather than a LEAP area basis, this includes wastes collected and recycled outside of the area.

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

#### Industrial and Commercial Waste

The amount of industrial and commercial waste generated in the area is quite low. In total less than 300,000 tonnes of industrial and commercial waste is disposed of within the area. Collectively the building, civil engineering, construction and demolition industries account, on average, for 90,000 tonnes per annum.

Construction waste is a priority waste stream and, as such, may be subjected to regulations similar to those shortly affecting the packaging industry.

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

#### Special Waste

The predominant types of special waste produced in the area are fibrous asbestos, non-chlorinated solvents and fine organic chemicals. Typically 100-200 tonnes per annum are disposed of within the area. With the recent revision of the definition of special waste, encompassing wastes previously not regarded as such, the amount of such wastes generated is expected to increase.

#### Household Waste Recycling and Composting

There are over 150 recycling sites in the catchment. The Council of Ryedale in particular 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 10% - very high for a rural area. The other rural Councils are expected to follow this lead.

Recent experimental trials of home composting in Ryedale and Selby have shown that they can significantly reduce the amount of wastes householders dispose of; 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.

### Producer Responsibility

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

### Energy from Waste

Waste incineration with energy recovery is not thought to be a viable option within the area given the low volumes of wastes and the high distances over which wastes would have to be transferred.

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

## **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 may often have potential for development as a source of potable water for other uses. However, the resources must also be protected in terms of quality and quantity by achieving a balance between the rights of abstractors, other lawful users of the water and the needs of the environment.

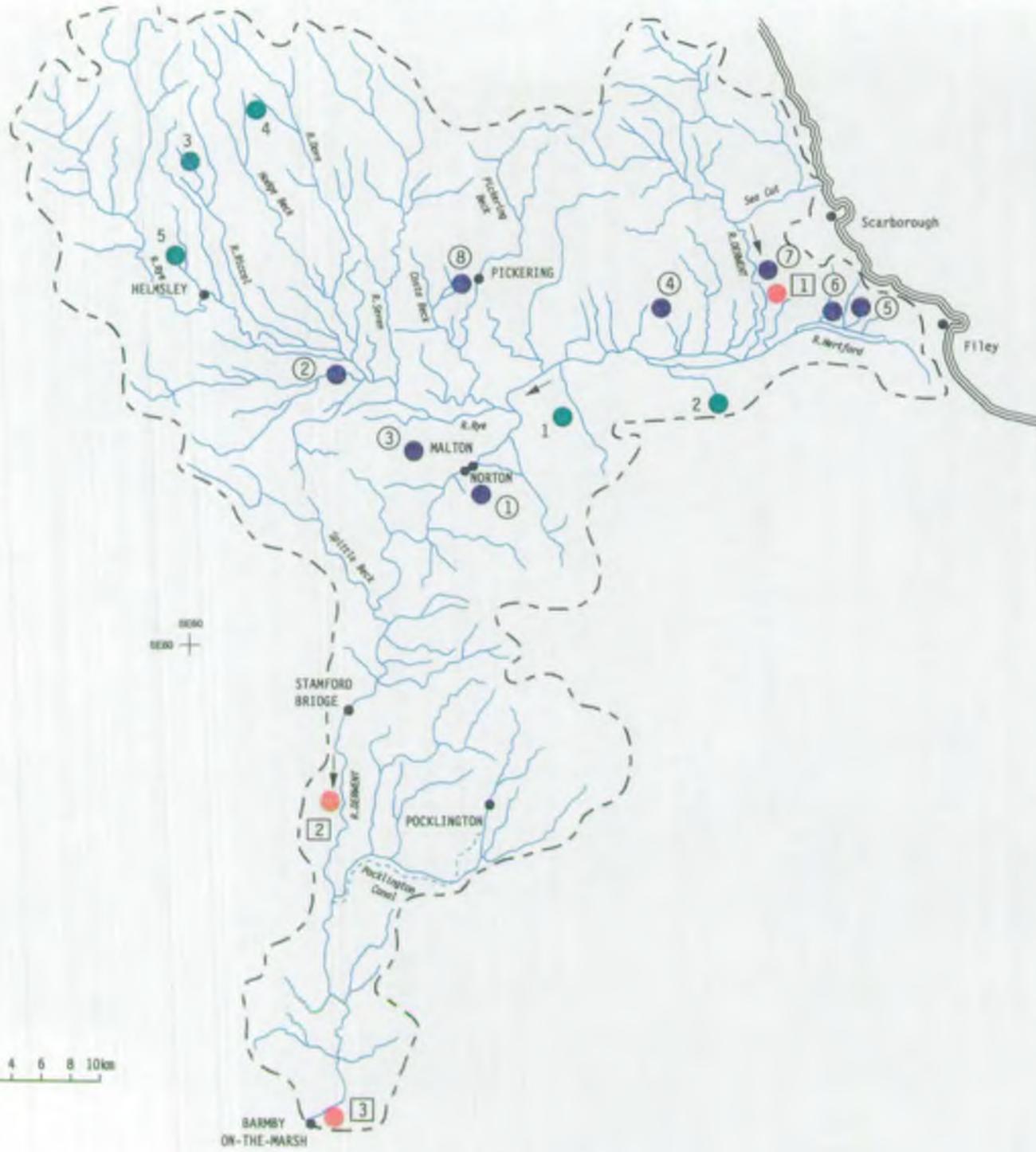
The Agency has a duty under the Water Resources Act 1991 to conserve, redistribute, augment and ensure proper use of water resources, whilst at the same time conserving and enhancing the environment.

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 policies for the determination of groundwater and surface water abstraction licences. The revised methodologies will aim to 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.

The Agency seeks to ensure the protection of groundwater resources by the definition of

# DERWENT AREA PUBLIC WATER SUPPLY SPRINGS & BOREHOLES



- KEY**
- CATCHMENT BOUNDARY
  - RIVER
  - - - CANAL
  - WATER TREATMENT WORKS
  - ① IRTON
  - ② ELVINGTON
  - ③ BARMBY
  - BOREHOLES
  - ① HOWE HILL (Norton)
  - ② EAST NESS
  - ③ AMOTHERBY
  - ④ SNAINTON
  - ⑤ CAYTON
  - ⑥ CAYTON CARR
  - ⑦ IRTON
  - ⑧ KELD HEAD
  - SPRINGS
  - 1 WHARRAM
  - 2 SHERBURN
  - 3 PIETHORNE
  - 4 BRANSDALE & RUDLAND
  - 5 BECKDALE

Figure 16

ground water protection zones and the implementation of these in conjunction with the Agency's "Policy and Practice for the Protection of Groundwater".

### Current Status

A report entitled "Regional Water Resources Strategy" was published in July 1994. This report is currently being reviewed and an update will be produced in 1997. The Water Resources Strategy and update will continue to be implemented via the licensing process.

The "Policy and Practice for the Protection of Groundwater" was produced in 1991. It aims to provide a framework for the protection of both individual ground water sources and ground water resources as a whole. In order to achieve this, the Agency is currently in the process of defining groundwater source protection zones for all ground water sources licensed to abstract more than 1 TCMD.

Consultants have produced a methodology for the determination of surface water abstraction licences. This methodology has now been adopted as the policy for such determinations in the North East Region. A similar methodology for the determination of groundwater abstraction licences in the North East will be produced next year.

Across the Upper Derwent area, within the Vale of Pickering, most of the public supplies are from the Corallian Limestone aquifer.

In the eastern part, the water balance shows that the majority of the groundwater is derived from the River Derwent via swallow holes above East and West Ayton. The whole aquifer is gravity fed and any further licensed abstraction would have affect on low flows in the river above East and West Ayton. Consultants were employed to produce a hydrogeological study and a mathematical model. The water balance suggested further medium to large abstractions during low flows could not be sustained. Therefore, the Corallian aquifer east of Brompton has been designated as a fully developed aquifer. There are restrictions on granting new abstraction licences.

Groundwater protection zones are being drawn up. The zones are nationally formatted and approved by the major abstractors before being put in the public domain. Initial zones for supplies above 1 tcmd for the abstractions from the Corallian aquifer in the eastern part of the Vale of Pickering are ready and should be put in public domain in 1997.

Various stakeholders are interested in the use of the lower Derwent. For example, the area is of major strategic importance for the public water supply, with river abstractions at both Elvington and Barmby. It is also a critical area for flood protection purposes. The Lower Derwent Valley, is also an important SSSI. These often conflicting interests make the management of the water resources and the environment difficult. A three year

project has been set up to produce an environmental report and finally a predictive hydraulic model for the sustainable management of the Lower Derwent Valley (see issue 20).

#### 6.4.2 WATER QUALITY - CHEMICAL

##### Background

The Derwent 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. As a result the rivers and tributaries in the catchment are predominantly of high quality, capable of supporting trout or high class course fisheries and suitable for potable supply. There are a small number of stretches of river in the catchment of poor water quality, often due to sewage effluent discharges. Although the catchment is mainly rural there were over 150 incidents of pollution reported to the Agency in 1995 which had some impact on water quality.

##### Current Status

The River Quality Objectives (RQO's) for the River Derwent, both short term and long term, are shown on the Figures 17 and 18. The RQO's are set using the Rivers Ecosystem Classification (see Appendix C) and the figures show current compliance with the objectives.

In the Upper Derwent area a number of stretches fail to meet their RQO's. The River Hertford fails to meet both its short and long term objective as a result of the impact of Seamer, Hunmanby and Folkton sewage treatment works (see issue 11). These discharges also cause the River Derwent to fail its long term RQO in the stretch from the Hertford confluence to Allerston Beck.

Pickering Beck upstream of Moorland Trout Farm, the River Seven upstream of Sinnington Trout Farm, Costa Beck upstream of Ox folds Beck, Mill Beck upstream of Howkeld Fish Farm, the River Rye upstream of Rye House Fish Farm and the River Dove upstream of Kirby Mills all fail to meet both their short and long term RQO's because of relatively low levels of dissolved oxygen. This is due to the fact that during the summer months most or all of the flow at these points has recently emerged from springs and is therefore naturally low in oxygen.

The River Rye above Rievaulx Abbey and Hodge Beck both fail to meet their RQO's on BOD. There are no significant discharges to these watercourses and the failure is almost certainly due to intermittent pollution incidents (see issue 11).

The main River Derwent between Malton STW and Low Hutton significantly fails to

# DERWENT AREA SHORT TERM RIVER QUALITY OBJECTIVES

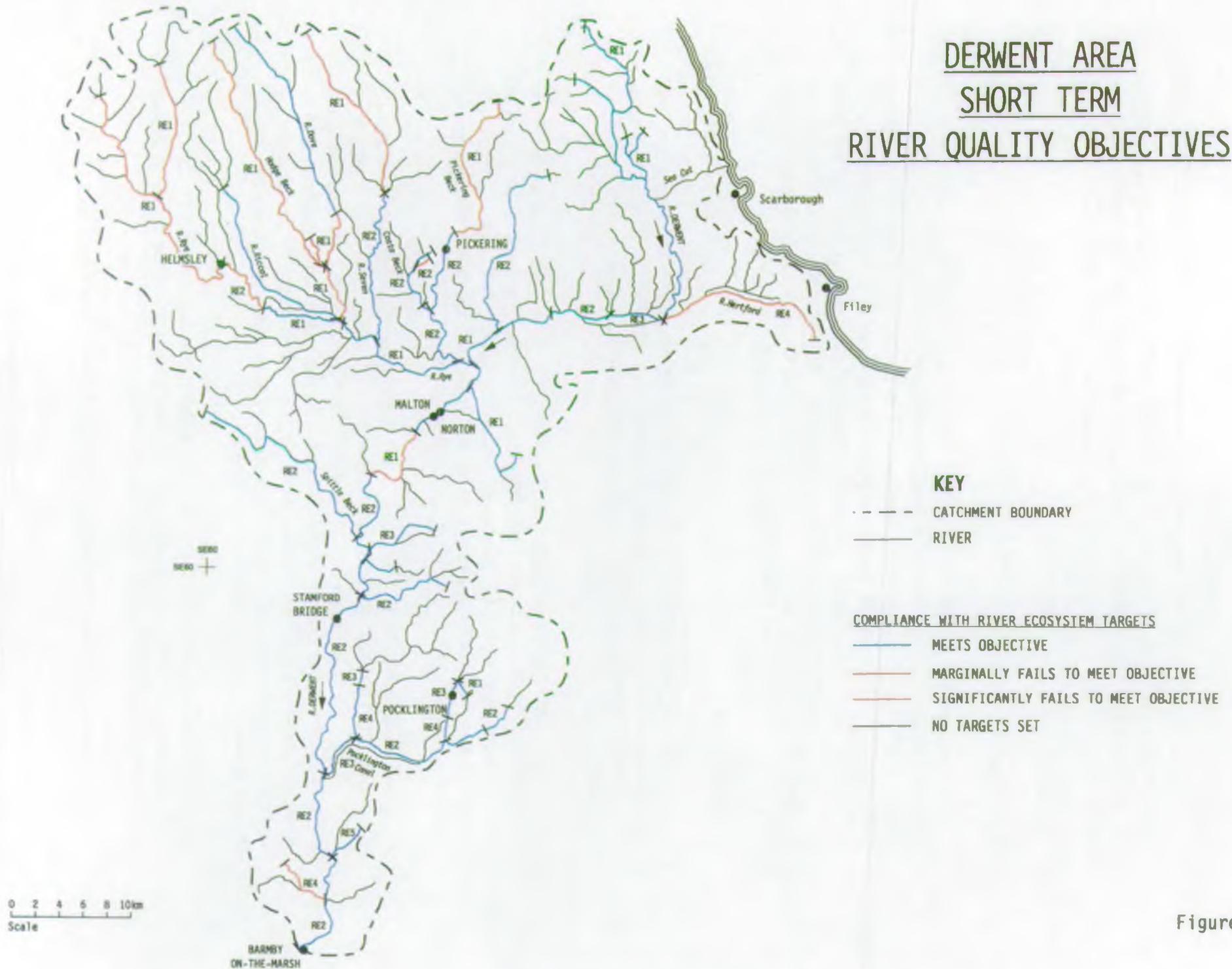
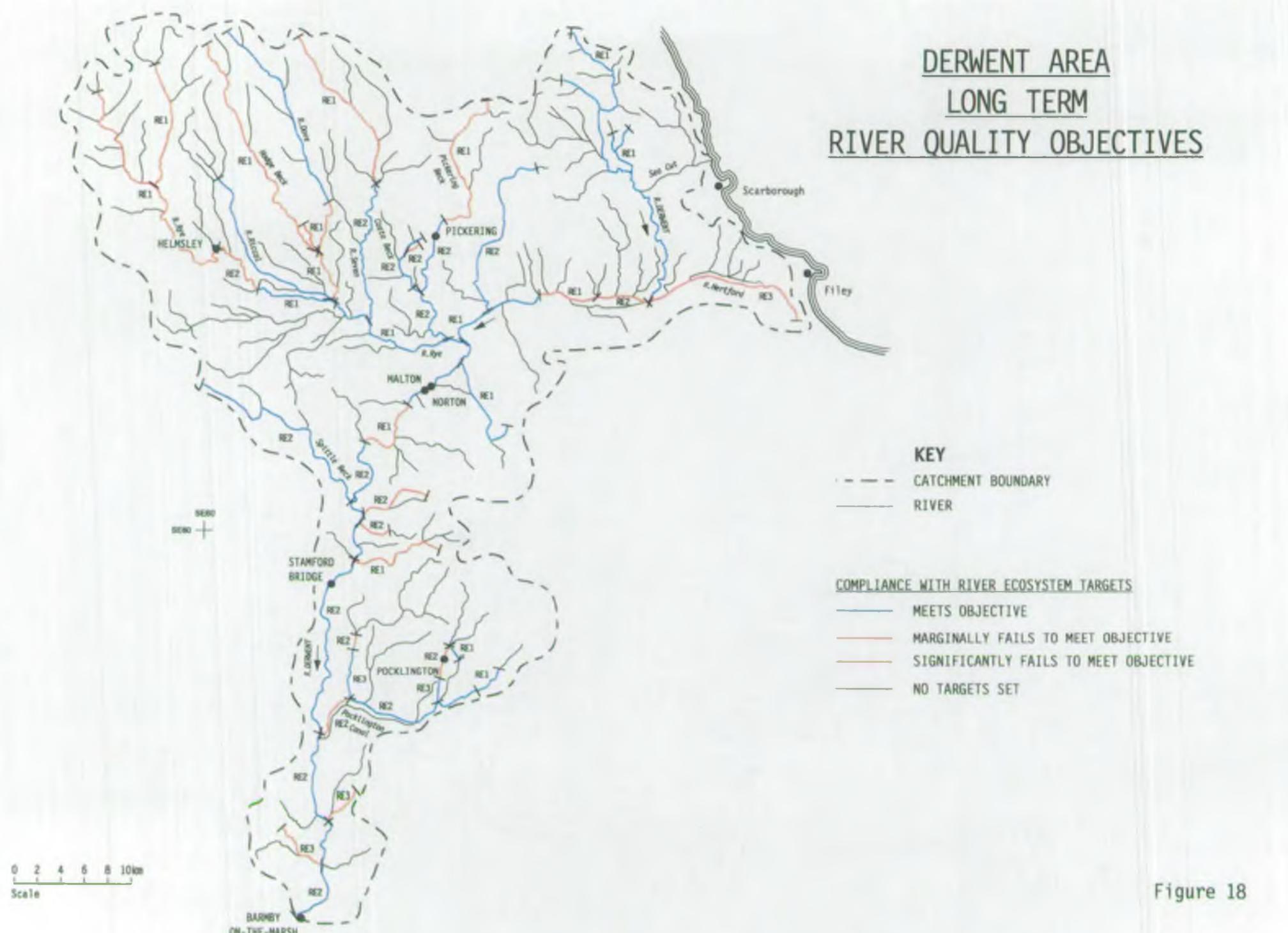


Figure 17

# DERWENT AREA LONG TERM RIVER QUALITY OBJECTIVES



**KEY**

- - - CATCHMENT BOUNDARY
- RIVER

COMPLIANCE WITH RIVER ECOSYSTEM TARGETS

- MEETS OBJECTIVE
- MARGINALLY FAILS TO MEET OBJECTIVE
- SIGNIFICANTLY FAILS TO MEET OBJECTIVE
- NO TARGETS SET

0 2 4 6 8 10 km  
Scale

Figure 18



meet its RQO because of high levels of ammonia. This is due to the discharge from Malton STW (see issue 11).

In the middle reach of the Derwent 3 tributaries do not meet their long term objective, again almost certainly because of intermittent pollution from agriculture (see issue 11).

The Pocklington and Blackfoss Beck tributaries comply with the short term objectives but some stretches are not reaching the long term RQO's. The reasons for this are not yet absolutely clear but intensive monitoring is being carried out to establish the cause.

At the lower end of the Derwent two of its tributaries, Lowmoor Drain and Birk Lane Drain, fail to meet their RQO's because of low levels of dissolved oxygen. This is almost certainly due to low flows in these watercourses, Lowmoor Drain has been completely dry, as a result of the dry weather in 1995.

The Derwent catchment in 1995 had 159 reported incidents of pollution. The Agency categorises incidents into 4 types; major (1), significant (2), minor (3) and unsubstantiated (4). The tables below shows the incidents for 1995 by category and type.

**Table 12: Pollution incidents in the Derwent area - Category**

Category	1	2	3	4
No of Incidents	0	3	57	99

**Table 13: Pollution incidents in the Derwent area - Pollutant**

Type	Oil	Chem- ical	Sewage	General	Agri- cultural	Natural	Not Known
Number	31	4	43	31	19	9	36

The commonest identified types of incident are for sewage and oil pollution, and whilst there were no major incidents in 1995, January 1st 1996 saw a major oil incident which killed 1000 fish and temporarily closed the potable abstraction at Elvington.

### 6.4.3 WATER QUALITY - BIOLOGICAL

#### Background

In addition to chemical water quality classification, streams and rivers can be assessed by analysis of their biological communities. Biological classes are based on types of invertebrate animals present and their abundance, with reference to their sensitivity to pollution. The continuous exposure of these animals to fluctuations in water quality can result in biological classification providing a better indication of water quality than chemical classification. These classes parallel those used for the NWC chemical quality classification, being ranked in order B1A, B1B, B2, B3, B4, with B1A being the highest quality. The new GQA scheme will have biological grades based on a different system, but for ease of comparison with earlier maps in NRA Catchment Management Plans, the old system is used here.

General water quality surveys were carried out in the Derwent area in 1990 and 1995, and comparisons between these data give an indication of biological water quality changes within the area. Comparing 1995 and 1990 data show 10 sites to have upgraded biological water quality, 19 sites unchanged, and 4 sites to have downgraded water quality. All these changes are relatively minor, but further monitoring will be required to determine whether these are real differences as a result of improved quality (e.g. through a reduction in the number of discharges), or short term natural fluctuations. Indications are that there are genuine improvements in some of the becks on the east side of the middle Derwent as a result of the work carried out by the Agency.

#### Current Status

The biological water quality for the Derwent area (incorporating the latest biological data collected in 1995) is shown on Figure 20. It is predominantly good, notably in most of the River Derwent and the majority of the tributaries in the upper catchment.

Some of the headwaters of the Upper Derwent and Rye tributaries support invertebrate faunas which indicate acid conditions arising from moorland runoff. This is largely a natural phenomenon which may reduce biological water quality in these streams, but it may be increased by acid deposition from the numerous power stations in Yorkshire.

Some of the tributaries of the middle and lower catchment have fair water quality, as does the River Derwent around Yedingham. The River Hertford and a very small number of other tributaries have poor water quality. These are largely associated with sewage effluents and agricultural activities and are currently being investigated.

Studies are underway to investigate the lower 10km of the River Derwent, where biological water quality is lower than expected.

# DERWENT AREA BIOLOGICAL QUALITY 1995

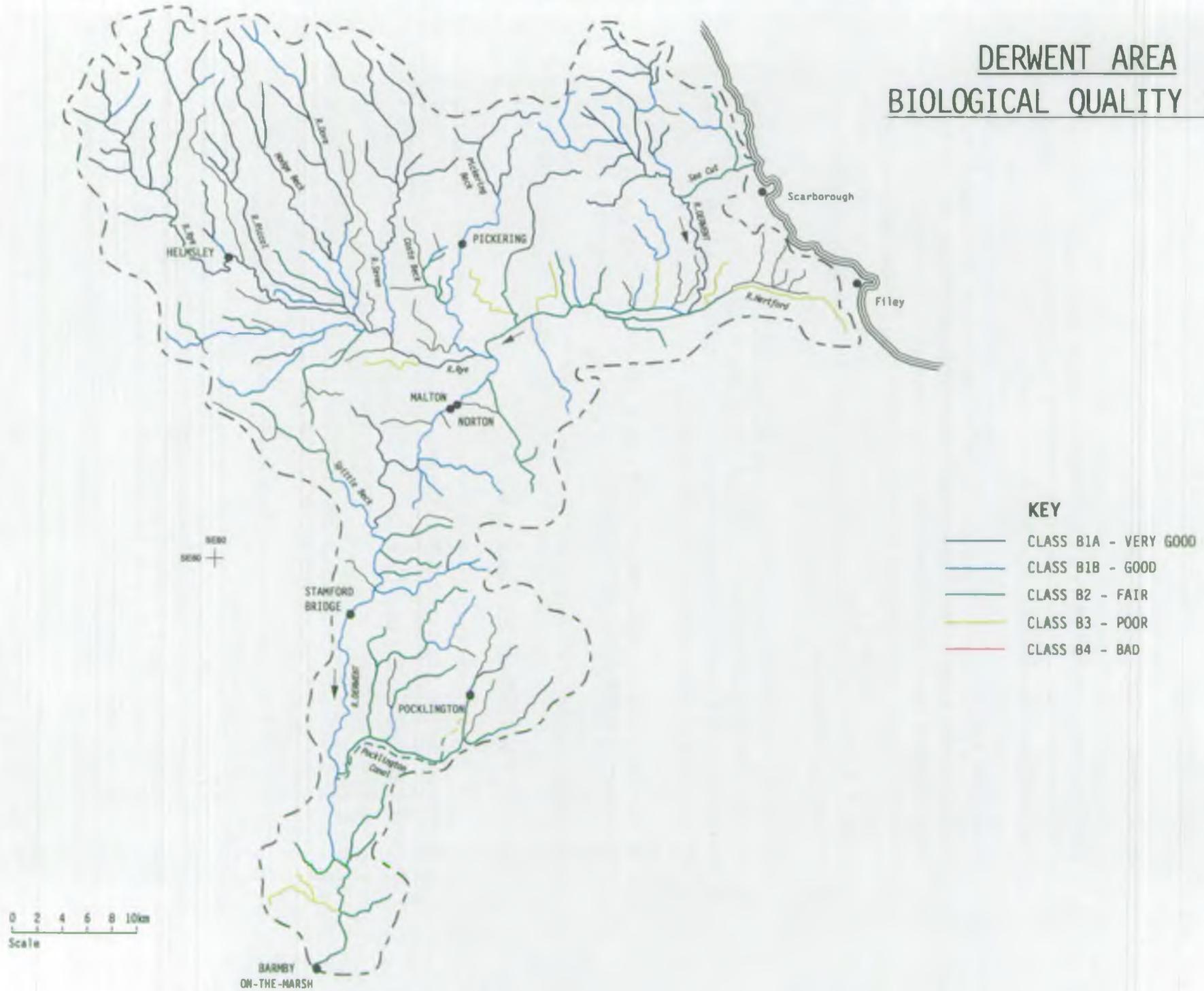


Figure 20

#### 6.4.4 FLOOD DEFENCE

##### Background

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

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

Each land use band has a target for the maximum flood risk to which it is likely to be exposed. The standards are expressed as a percentage which reflects the likelihood that during any year a flood event may occur which exceeds the magnitude for which protection is available or should ideally be provided.

For example, a standard of 2% means that, for any given year, the likelihood of a flood flow occurring which significantly affects key land use features, is 50 to 1 or 2%.

##### Current Status

Table 14: 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

Details of the targets and land-use bands are given in Table 14.

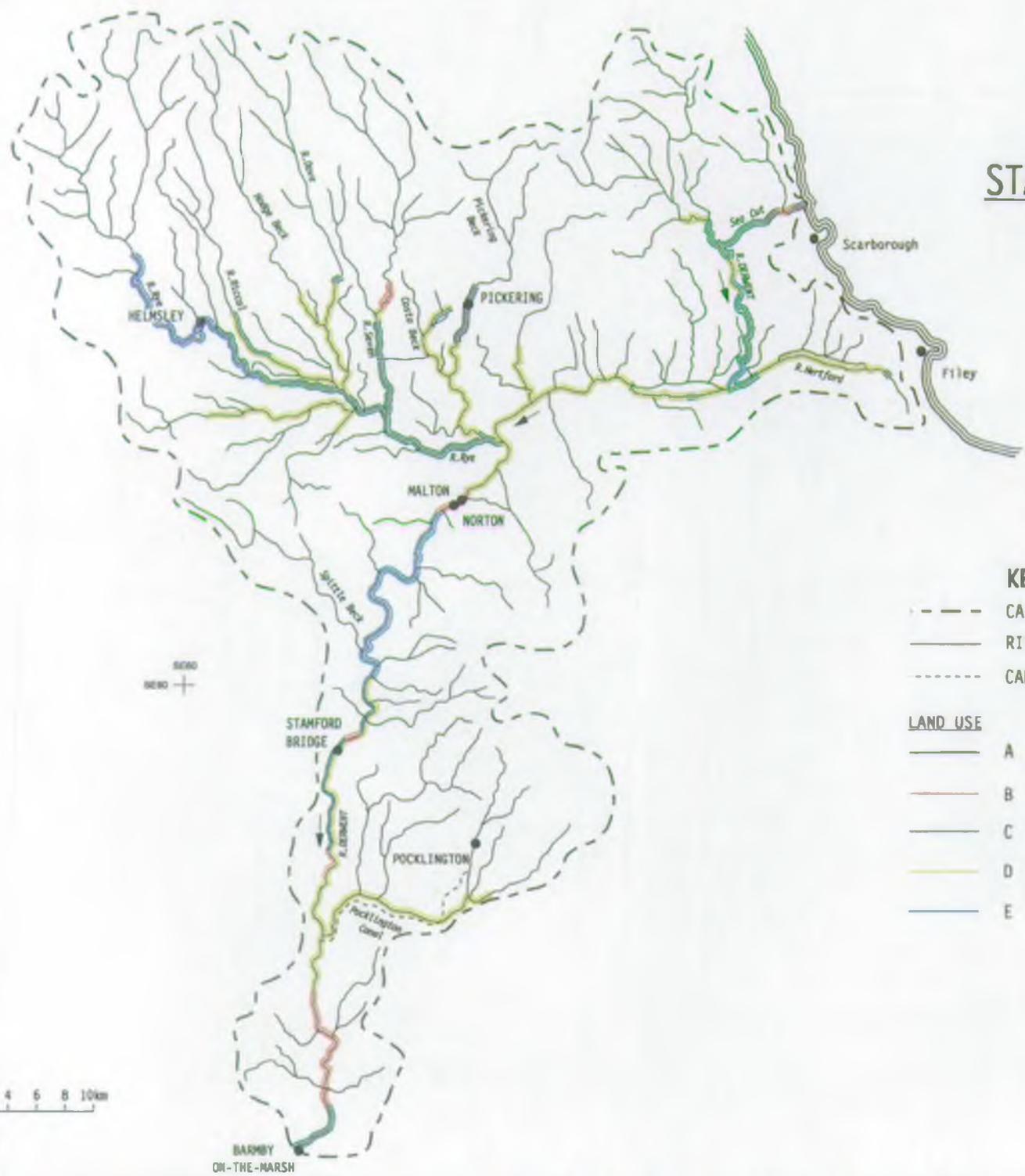
A comparison of the target and actual standards of service allows improvement and maintenance works to be prioritised towards those rivers which do not meet their target standards.

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

**Table 15: Sites in the Derwent area where indicative Standards of Service are not achieved**

RIVER	URBAN	RURAL
River Derwent	Stamford Bridge Malton Norton	Low Marishes Elvington Sutton upon Derwent Thorganby Brighton
Pickering Beck	Pickering	Leas Lane
River Seven		Sinnington
River Rye		Butterwick Nunnington
Bielby Beck		Thornton

# DERWENT AREA FLOOD DEFENCE STANDARDS OF SERVICE



### KEY

- - - - CATCHMENT BOUNDARY
- RIVER
- - - - CANAL

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

Figure 21

## 6.5 BIODIVERSITY

### Background

The key sustainable development objectives for wildlife are to conserve as far as reasonably possible the wide variety of species and habitats in the United Kingdom, and to ensure that commercially exploited species are managed in a sustainable manner.

### Current Status

In addition to a number of designations the river and its surroundings support a number of species given statutory protection under the Wildlife and Countryside Act 1981 and now covered by the UK Biodiversity Action Plan. This latter initiative resulted from the Rio Earth Summit 1992 and the 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 Derwent LEAP area:

**Water Vole (*Arvicola terrestris*)**

**Otter (*Lutra lutra*)**

**White Clawed Crayfish (*Austropotamobius pallipes*)**

**Depressed River Mussel (*Psuedonodotana complanata*)**

At least three further species listed in the action plan, but not a special responsibility of the Agency, are known to be associated with the Derwent;

**Gt. Crested Newt (*Triturus cristatus*)**

**Bittern (*Botaurus stellaris*)**

**The Beetle - *Panagoecus crux major***

In addition there is one listed habitat for which the Agency has special responsibility and that is **Chalk Streams**. A number flow from the Yorkshire Wolds to join the Derwent to the south and east of Malton, effectively forming a sub-catchment. These streams are the most northerly of their type in England and therefore important in terms of their geographical location.

There are numerous other species listed in the Red Data Books as rare or endangered and which are found within the Area, and similarly there are habitats, most notably the flood meadows of the Derwent Ings (classified as MG 4 Grassland) or heather moorland which are of international importance.

## APPENDIX A : 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.
- to achieve significant and continuous improvements in the quality of air, land and water.

### Water Resources

It is the Agency's responsibility to assess, plan and conserve water resources. The Environment Act 1995 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 Environment Act 1995 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 exceptions for small abstractions from boreholes and springs. 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 functions and external bodies 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; and
- pollution prevention.

Water quality management is based principally on monitoring of the environment to establish chemical, biological and microbiological quality. These data are used by the Agency to detect trends, plan improvements and execute its statutory duties regarding the setting of discharge parameters and compliance with EC directives.

The Agency controls inputs into the environment via the issue of consents. Discharges from industrial, agricultural, domestic and sewage related sources are regulated by specification of effluent quality limits and conditions which the discharger must achieve.

Such discharges are monitored routinely and failure to satisfy consent conditions may lead to legal action being taken.

The Agency makes an immediate response to all reports of pollution. During a pollution incident investigative actions are taken to identify the source, stop the discharge, minimise its adverse effects and ensure that remedial work, where appropriate, is completed. Legal action is considered in cases of serious 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 two thousand 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, 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.

### **Conservation**

The purpose of the conservation activities of the Agency is to:

- conserve and enhance the wildlife, landscapes and archaeological features

- associated with inland and coastal waters; and,
- 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, protect sites of conservation interest and take into account the effects that any proposed developments would have. This is achieved by regulating the work of others through the land use planning consultation process and 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 these 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'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 1991 Act is the statutory duty placed on the Agency to 'maintain, improve and develop fisheries'. The term 'fisheries' encompasses both the recreational fishery and the fishery as an environmental resource. 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 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, eels and, where appropriate, coastal fisheries;
- to regulate fisheries through the enforcement of a consistent series of licences, orders, byelaws and consents;
- to monitor the fisheries status of rivers and inland estuaries and, where appropriate, coastal waters;
- to formulate policies to maintain, improve and develop fisheries, and to restore and rehabilitate damaged fisheries;
- to provide an efficient and effective fisheries service which is responsive to the needs of its customers and is based on a sound charging system.

## **Flood Defence**

The Agency has powers to:

- protect people and property against flooding from rivers and the sea;
- provide a means for the drainage of land; and,
- 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 (e.g. 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 river the Agency also has powers to control weirs and culverts on ordinary watercourses that would otherwise affect the flow.

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 further improve 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 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 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, and any activities likely to pollute surface waters or groundwaters, increase the demand for water resources or adversely affect the conservation and amenity value of the environment.

Guidance notes for local planning authorities on the methods of protecting the water environment through development plans have been produced (September 1993), and these are being promoted in conjunction with the initiative to prepare LEAPs.

### **Summary**

Further information on the work of the Agency can be found in a series of Agency strategy documents covering water quality, water resources, flood defence, fisheries, conservation, navigation, recreation and research and development. These documents are available from the Agency Corporate Planning Section at the Environment Agency head office in Bristol.

## APPENDIX B : 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 16: Chemical standards for River Ecosystem Classification**

Class	Dissolved Oxygen % saturation	BOD (ATU) mg/l	Total Ammonia mg N/l	Un-ionised Ammonia mg N/l	pH lower limit as 5 percentile; upper limit as 95 percentile	Hardness mg/l Ca CO <sub>3</sub>	Dissolved Copper µg/l	Total Zinc µg/l
	10 percentile	90 percentile	90 percentile	95 percentile			95 percentile	95 percentile
RE1	80	2.5	0.25	0.021	6.0 - 9.0	≤10 >10 and ≤50 >50 and ≤100 >100	5 22 40 112	30 200 300 500
RE2	70	4.0	0.6	0.021	6.0 - 9.0	≤10 >10 and ≤50 >50 and ≤100 >100	5 22 40 112	30 200 300 500
RE3	60	6.0	1.3	0.021	6.0 - 9.0	≤10 >10 and ≤50 >50 and ≤100 >100	5 22 40 112	300 700 1000 2000
RE4	50	8.0	2.5	-	6.0 - 9.0	≤10 >10 and ≤50 >50 and ≤100 >100	5 22 40 112	300 700 1000 2000
RE5	20	15.0	9.0	-	-	-	-	-

Class RE 1: Water of very good quality (suitable for all fish species).

Class RE 2: Water of good quality (suitable for all fish species).

Class RE 3: Water of fair quality (suitable for high class coarse fish populations).

Class RE 4: Water of fair quality (suitable for coarse fish populations).

Class RE 5: Water of poor quality (likely to limit coarse fish populations).

Unclassified: Water of bad quality (fish are unlikely to be present), or insufficient data available by which to classify water quality.

**APPENDIX C: GQA CLASSIFICATION**

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

**Table 17: GQA Classification**

Water quality	Grade	Dissolved Oxygen	Biochemical Oxygen Demand (ATU)	Ammonia
		(% saturation) 10 percentile	(mg/l) 90 percentile	(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 D: MEMORANDUM OF UNDERSTANDING ON RIVER SSSIs**

This memorandum of understanding (MoU) was signed by the National Rivers Authority and English Nature before the formation of the Agency. However, this agreement is being honoured by the Agency (this MoU has not been rewritten for the purposes of this document).

**1. PURPOSE AND SCOPE**

- 1.1 This MoU is intended to establish a mutual understanding and common purpose between the National Rivers Authority (NRA) and English Nature regarding the protection and management of rivers notified as Sites of Special Scientific Interest (SSSIs).
- 1.2 It should provide for consistency of approach, clarify responsibilities, and help to streamline the statutory consultation and consenting procedures in which both organisations are involved. Consequently, it should improve the understanding of river SSSIs by staff of both organisations and by riparian owners and occupiers.
- 1.3 This MoU provides guiding principles on the approach to management issues. Joint guidance regarding the implementation of procedures and actions, and how dispute are to be resolved, will be produced to support this Memorandum.
- 1.4 This Memorandum will apply to Special Areas of Conservation (SACs) designated under the European Habitats Directive and to the Environment Agency which will supersede the NRA in April 1996.
- 1.5 It is intended that this Memorandum will provide a model which is applicable to other designated conservation sites such as wetlands, lakes and estuarine/coastal habitats notified as SSSIs, Special Protection Areas and Ramsar sites.

**2. BACKGROUND****The National Rivers Authority**

- 2.1 The NRA is a non-government departmental public body with statutory powers and duties in respect of water pollution control, water resource management, flood defence, fisheries, and, in certain parts navigation, of rivers in England and Wales. The NRA has a duty to further conservation and also generally to promote the conservation of flora and fauna dependent on the water environment and recreation on inland waters.
- 2.2 The NRA operates through an integrated river basin management approach and its activities and priorities are set out in Catchment Management Plans which are published following extensive public consultation.

### **English Nature**

- 2.3 English Nature is the statutory adviser to Government on nature conservation in England and promotes the conservation of England's wildlife and natural features.
- 2.4 It has a duty to identify, using scientific criteria, areas of special conservation interest and to notify these as SSSIs to owners, occupiers, local planning authorities, the Secretary of State, the NRA, water companies and Internal Drainage Boards.
- 2.5 As at August 1995, some 3700 SSSIs have been notified, covering about 7% of the surface area of England and involving English Nature in direct contact with over 30,000 landowners and occupiers.

### **Sites of Special Scientific Interest (SSSIs)**

- 2.6 SSSIs are the very best examples of our national heritage of wildlife habitats, geological features and landforms. Some 27 rivers in England have been identified as the best examples of their type. English Nature has a programme to notify these rivers as SSSIs by 1998.
- 2.7 The protection and management of these rivers will help towards the UK's Biodiversity Action Plan, a government commitment arising from the 1992 Rio Earth Summit. Some of the rivers have been proposed as Special Areas of Conservation under the European Habitats Directive. The NRA, as a competent authority, has special responsibilities towards SACS.
- 2.8 Management of SSSIs is geared to maintaining the special interest of the site. Many management activities carried out over a number of years, by their very nature create, or contribute to the special interest. Some activities are not conducive to this aim and permission has to be obtained from English Nature before carrying out these actions. Since river SSSIs will be multi-ownership designations, protection of the special interest will rely on the goodwill and understanding of riparian owners.

### **The NRA and SSSIs**

- 2.9 The NRA has a statutory duty to consult English Nature before carrying out or authorising any work, operation or activity which in its opinion is likely to damage the special interest of the SSSI. The only exception is where emergency works are needed, in which case consultation is carried out as soon as practicable thereafter.

## **3. TOWARDS A COMMON OBJECTIVE**

- 3.1 We jointly recognise that the best examples of natural or semi-natural rivers need to be specially protected through appropriate management and within a statutory framework.

- 3.2 We recognise that the protection and management of rivers is primarily achieved through the NRA's powers and duties and the action of riparian landowners. The NRA as a duty, as far as is consistent with its other functions, to further the conservation of features of special interest. We recognise that to maintain the special interest, a joint approach between the NRA and English Nature to the protection and management of river SSSIs is required.
- 3.3 We recognise that there must be close collaboration with riparian landowners and other interested bodies as appropriate, with an emphasis on encouraging those management activities which contribute to, and maintain the special interest of the river.
- 3.4 We recognise the importance of liaison with riparian landowners and occupiers in the process of developing a management strategy for protecting the special interest of the river.

#### **4. STATEMENT OF INTENT AND AGREED ACTIONS**

##### **Conservation Strategy**

- 4.1 We will jointly agree and produce, for each river SSSI, a conservation strategy. Each strategy will summarise the conservation interest of the river, factors affecting that interest and any problems which need to be investigated or acted upon.
- 4.2 The strategy will include jointly agreed objectives and a plan of action set out over a 10 year period. The objectives will be based upon and consistent with those in the respective Catchment Management Plan, and where appropriate, water level management plans(s). These objectives will also be consistent with any other jointly agreed procedures between the NRA and English Nature.
- 4.3 The strategy will identify specific locations within the SSSIs where features of special interest are particularly vulnerable and need strict protection.
- 4.4 A recommended framework for the conservation strategy is set out in Annex 1, but we recognise that local conditions will shape individual documents.

##### **Consenting Protocol**

- 4.5 We will jointly agree, for each river SSSI, a protocol which establishes respective responsibilities, clarifies procedures for landowners and reduces bureaucracy with regard to activities which require authorisation (consent) by the NRA or English Nature.
- 4.6 The protocol will identify acceptable management activities which contribute to the special interest of the site and those which may adversely affect that interest. It will set out procedures for statutory consultation with English Nature when the NRA is

considering whether to carry out works or authorise operations affecting the river. It will also establish whether third party applicants should contact the NRA or English Nature first when they require authorisation from both organisations.

- 4.7 The aim of the protocol is to agree (i) the sorts of activities which can continue without prior consultation with English Nature (i.e. those which are not likely to affect the features of special interest of the river), (ii) those which require formal prior consultation (i.e. by their nature likely to damage the features of special interest), and may not necessarily be authorised and (iii) a procedure for resolving difficult cases. This should minimise the need for detailed consultation in the day-to-day management of the river. A framework for the protocol is set out in Annex 2.
- 4.8 In all instances, decisions will be based on best available information and good management practice. We will share information and where necessary collaborate to investigate specific aspects requiring further research.

## **5. DELIVERY AND RESPONSIBILITIES**

- 5.1 We recognise that this Memorandum of Understanding can only provide guiding principles for the development of conservation strategies and consenting protocols. Further detailed guidance will need to be jointly agreed and issued to support the general principles.
- 5.2 Each conservation strategy and consenting protocol will need to be jointly agreed by NRA and English Nature staff locally, having regard to national policy guidance relating to the issues under consideration. In the event of a dispute over matters of policy, the matter should be referred for resolution at national level.
- 5.3 Each conservation strategy and consenting protocol will be jointly owned by the NRA and English Nature and responsibility for drafting the component sections will reflect the respective expertise in the two organisations.
- 5.4 We recognise that each conservation strategy will be based on existing information held by both the NRA and English Nature. Resources in the first instance will need to be focused on drawing information together and developing an agreed action plan.
- 5.5 We agree that any negotiation with third parties regarding agreed actions in the conservation strategy have the full support of both the NRA and English Nature. This will minimise the chances of cutting across current initiatives.
- 5.6 We recognise that not all the detailed aspects of the conservation strategy and the consenting protocol will be suitable for publication. However, we agree that a summary statement could be made widely available, giving aims and objectives of the conservation strategy in its broadest sense.

5.7 The summary statement referred to in 5.6 should clearly set out the respective roles of the NRA and English Nature in relation to management of the river. Agreed actions should also be incorporated into Catchment Management Plans whenever possible.

## 6. **RESOURCES AND TIMETABLE**

6.1 We recognise that there will be resource implications in the short-term associated with preparing the conservation strategies and consenting protocols. However, since most of the information needed is already available the amount of effort should be relatively small.

6.2 We recognise that there will be longer-term savings associated with an agreed conservation strategy and consenting protocol, particularly in terms of consultation time regarding individual authorisations.

6.3 We agree that in order to benefit from these savings, the process should start now and that conservation strategies and consenting protocols for all 27 river SSSIs in England should be completed by March 1998.

6.4 We intend that the operation of the consenting protocol and the action plan of respective conservation strategies should be jointly reviewed annually and improvements identified and implemented.

ED GALLAGHER  
Chief Executive  
National Rivers Authority

DR DEREK LANGSLOW  
Chief Executive  
English Nature

**APPENDIX E : ORGANISATIONS CONSULTED**

ADAS Leeds  
British Canoe Union  
British Waterways  
The Coal Authority  
CONSYDER  
Countryside Commission  
Cranedale Centre  
Department of the Environment  
Derwent Anglers Club  
East Riding of Yorkshire Council  
English Nature  
Esk and Derwent Consultative Association  
Farming and Wildlife Advisory Group  
Forestry Authority  
Friends of the Earth  
Hutton Ambo Angling Club  
Lord Derwent  
Lower Ouse Internal Drainage Board  
Ministry of Agriculture, Fisheries and Food  
Malton and Norton Canoe Club  
Muston and Yedingham Internal Drainage Board  
National Farmers Union  
National Trust  
North York Moors National Park  
North Yorkshire County Council  
North Yorkshire Otter Project  
RJB Mining (UK) Ltd  
Royal Society for the Protection of Birds  
Ryedale District Council  
Salmon and Trout Association  
Scalby Beck Angling Club  
Scarborough Borough Council  
Selby District Council  
Water Powered Technologies, ETSU  
Wildfowl and Wetlands Trust  
York Waterworks  
Yorkshire Countrywomens Association  
Yorkshire Water Services Ltd  
Yorkshire Wildlife Trust

**APPENDIX F: 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 Ltd) plan the work required and the capital expenditure necessary, for improvements and maintenance of the water supply, sewage treatment works and sewerage systems. These are drawn up through consultations with the Agency and other bodies to cover a five year period. The Asset Management Plans have to be agreed by the Department of the Environment and OFWAT.
Aquifer	A layer of underground porous rock which contains water and allows water to flow through it.
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.

<b>Bacteria</b>	Single-cell micro-organisms which multiply by fission. Aerobic bacteria need oxygen for growth. Anaerobic bacteria grow in an oxygen deficient environment. Other bacteria are typified according to the predominant reaction involved, 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.
<b>Biochemical Oxygen Demand</b>	A measure of the amount of oxygen in water during the breakdown of organic matter.
<b>Catchment</b>	The total area of land which contributes surface water to a specified watercourse or water body.
<b>Combined Sewer Overflow (CSO)</b>	An overflow structure which permits a discharge from the sewerage system during wet weather conditions.
<b>Controlled Waste</b>	Defined by the Water Resources Act 1991 Part III Section 104. They include household, industrial and commercial waste.
<b>Controlled Waters</b>	Defined by the Water Resources Act 1991 Part III Section 104. They included groundwaters, inland waters and estuaries.
<b>Cumecs</b>	Cubic metres per second.
<b>Dangerous Substances</b>	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.
<b>Diffuse Pollution</b>	Pollution from widespread activities with no one discrete source.
<b>Discharge Consent</b>	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.

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 (EQS)	The quantity of a substance found in a body of 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 to 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	A measure used for assessing the value of property and land protected against flooding by flood defences.
Hydrograph	The graph of groundwater levels, river levels, or river flow plotted.
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.
Leachate	Liquid which seeps through a landfill, and by so doing extracts substances from the deposited waste.
Leaching	Removal of soluble substances by action of water percolating.
Macroinvertebrate	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 "main River" are held by MAFF in London and the Agency in Regional Offices. The Agency has

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	<p>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".</p>
Methane	<p>CH<sub>4</sub>, a colourless, odourless, flammable gas, formed during the anaerobic decomposition of putrescible matter. It forms explosive mixture in the range 5-15% methane in air.</p>
Microbe Micro-Organism	<p>Small organisms, usually single cells which normally are only visible under a microscope. They include algae, bacteria and fungi. See also Bacteria.</p>
Mld	<p>Megalitres per day.</p>
µg/l	<p>Microgrammes per litre.</p>
mg/l	<p>Milligrams per litre.</p>
National Nature Reserve	<p>An area of land designated by English Nature under Section 35 of the Wildlife and Countryside Act 1981. They are managed by or on behalf of English Nature specifically for wildlife conservation purposes.</p>
Potable Water	<p>Water of suitable quality for drinking.</p>
Prescribed Flow Condition	<p>A condition attached to an abstraction licence such that if the river flow is less than a present flow measurement, abstraction must cease until flows are restored.</p>
Public Surface Water Sewer (SWS)	<p>Sewers which transmit surface water runoff to a watercourse. The water should be uncontaminated and is the responsibility of the sewerage undertaker (in this case Yorkshire Water Services Ltd) to maintain and control.</p>
Q95	<p>The flow of a river which is exceeded on average</p>

	for 95% of the time.
<b>Ramsar Sites</b>	Internationally important wetland sites adopted from the Convention of Wetlands of International Importance especially as water-fowl habitats (1971) and ratified by the UK government in 1976.
<b>Rank Vegetation</b>	Coarsely overgrown vegetation.
<b>Return Period</b>	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.
<b>Riparian Owner</b>	A person/organisation with property rights on a river bank.
<b>River Corridor</b>	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.
<b>River Quality Objective (RQO)</b>	The level of water quality that a river should achieve in order to be suitable for its agreed uses.
<b>Regional Telemetry System (RTS)</b>	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.
<b>Sewage Sludge</b>	Sludge resulting from the treatment of raw sewage. It typically contains 70-90% water, prior to dewatering.
<b>Silage</b>	A winter feed for cattle. Silage is produced in the summer by bacterial action on freshly cut grass and is stored in a clamp or silo. Silage production results in the formation of a highly polluting effluent.
<b>Site of Special Scientific Interest</b>	A site designated under the Wildlife and

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	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 EEC Wild Birds Directive.
Springs	Natural emergence of groundwater at the surface.
Statutory Water Quality Objectives (SWQOs)	Water Quality objectives set by the Secretary of State for the Environment, in relation to controlled waters.
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.

#### Wastes, Controlled

"Controlled Waste" is waste described as such in the Control of Pollution Act 1974 Part 1. Section 30(1) which defines 'controlled waste' as "household industrial, and commercial waste or any such waste".

#### 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 (qv) 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, Household

'Household wastes' is defined in the Control of Pollution Act Section 30(3)(a) as consisting "of waste from any factory within the meaning of the Factories Act 1961 and any premises forming part of a university or school or other educational establishment or forming part of a hospital or nursing home".

#### 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 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 prenotification 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.

**APPENDIX G: ABBREVIATIONS**

ALARA	As Low As Reasonably Achievable
AMP	Asset Management Plan
AOD	Above Ordnance Datum
BATNEEC	Best Available Technique Not Entailing Excessive Costs
BPEO	Best Practicable Environmental Option
BTMA	Best Technical Means Available
COPA74	Control of Pollution Act 1974
CRI	Chemical Release Inventory
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
FWAG	Farming and Wildlife Advisory Group
HMIP	Her Majesty's Inspectorate of Pollution
HNDA	High Natural Dispersion Area
IPC	Integrated Pollution Control
LEAP	Local Environment Agency Plan
LPA	Local Planning Authority
MAFF	Ministry of Agriculture, Fisheries and Food
NRA	National Rivers Authority
NWC	National Water Council
NYCC	North Yorkshire County Council
NYMNP	North York Moors National Park
OFWAT	Office of Water Trading
PM10	Particulate matter below 10 $\mu$ diameter
PPG	Planning and Policy Guidance
ppb	Parts per billion
RQO	River Quality Objective
SPA	Special Protection Areas
SSSI	Site of Special Scientific Interest
STW	Sewage Treatment Works
UWWTD	Urban Waste Water Treatment Directive
WCA	Waste Collection Authority
WDA	Waste Disposal Authority
WRA	Waste Regulation Authority
WRA91	Water Resources Act 1991
WTW	Water Treatment Works

## 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**