EA-NORTH EAST
LEAPs

3948

local environment agency plan

HULL AND EAST RIDING

CONSULTATION REPORT

AUGUST 1997

HO

ENVIRONMENT AGENCY

Information Services Unit

Please return or renew this item by the due date

Due Date

ENVIRONMENT AGENCY

YOUR VIEWS

The Hull & East Riding Local Environment Agency Plan Consultation Report attempts to highlight the most significant issues of the area and propose solutions within a timescale of 5 years.

We would like to hear your views:

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

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

The Hull & East Riding Environment Planner
Environment Agency
Ridings Area
Olympia House
Gelderd Road
Leeds LS12 6DD

All comments must be received by 30th November 1997.

Comments received on the Consultation Report will be considered in preparing the next phase, the Action Plan. This Action Plan will focus on specific activities within timescales and costs where possible.

All written responses shall be considered to be in the public domain unless Consultees explicitly request otherwise.

Note: Whilst every effort has been made to ensure the accuracy of information in this report there may be errors or omissions which we will be pleased to note.

Structure of this Consultation Report

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

PART I

Consists of an introduction to the Agency, an overview of the Hull & East Riding area, key partnerships the Agency has with other bodies and proposals we feel will address the important environmental issues in the area.

PART II

Detailed consideration is given to the state of the environment of the Hull & East Riding area. Supporting information can be found here to help you make an informed decision as to the validity of the issues and proposals in Part I.

ENVIRONMENT AGENCY
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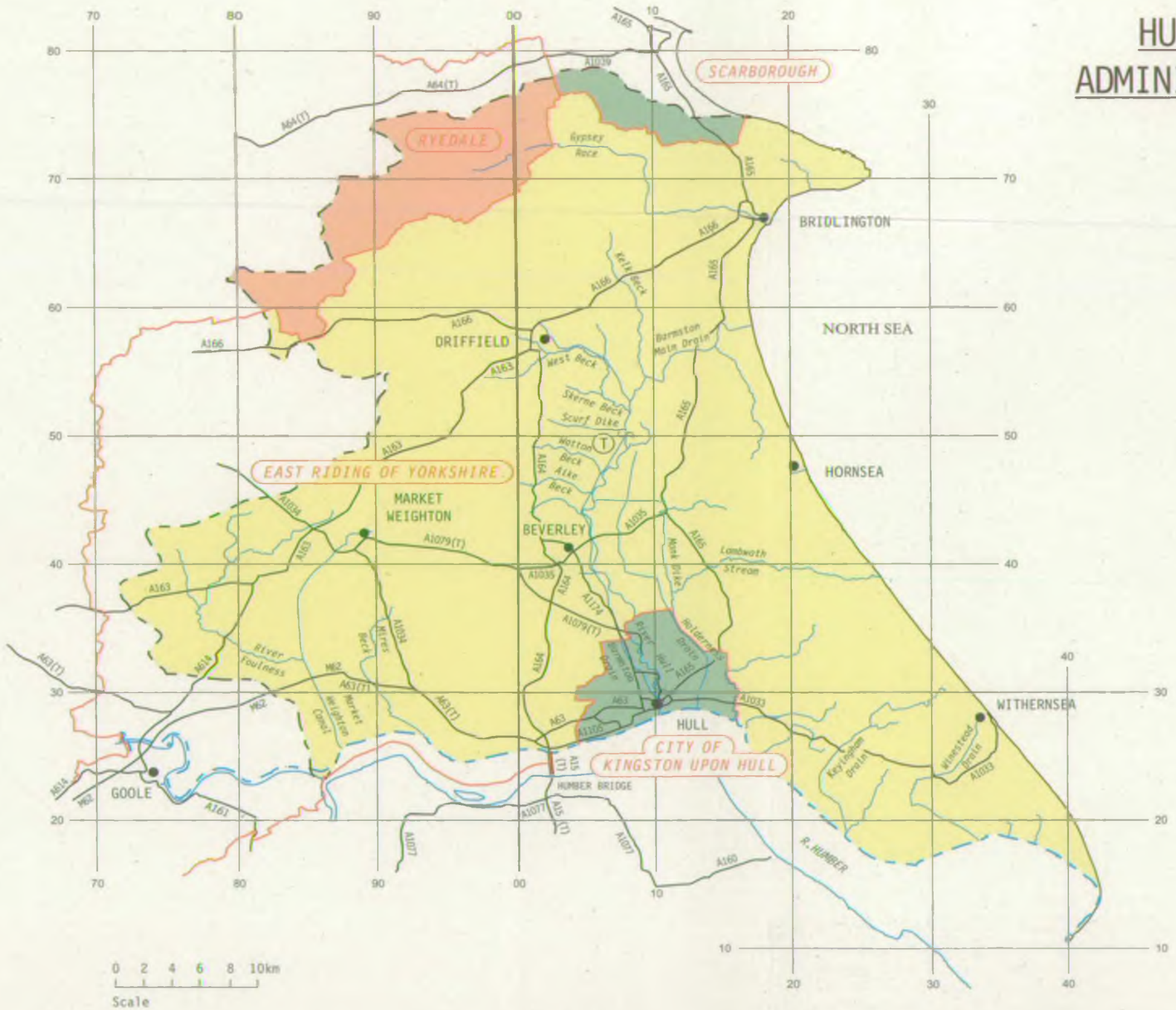
HULL & EAST RIDING ADMINISTRATIVE BOUNDARIES



KEY

- CATCHMENT BOUNDARY
- RIVER
- TIDAL LIMIT

EA - North East LEAPs

FOREWORD

The Environment Agency is one of the most powerful environmental regulators in the world. We have a duty to contribute towards the objective of Sustainable Development, which necessitates taking an integrated approach to all our activities concerned with water management and pollution prevention and control.

It is important that the community is fully involved in protecting and enhancing the environment. Local Environment Agency Plans (LEAPs) provide a vehicle for consultation and partnership for setting priorities, solving problems and realising opportunities in a co-ordinated way. The consultation report for the Hull and East Riding LEAP has been prepared with this in mind. It will lead to the development of a practical Action Plan, which will be implemented with progress being regularly reported for comment.

This, and other LEAPs for the constituent parts of the North East Region, will represent a shared vision for the future. It will provide a vital role in the protection and enhancement of our environment, whilst recognising the importance of balancing conflicting activities and the need to take into account both the costs and the benefits of the proposals.

Tony Edwards
Ridings Area Manager.

DRAFT VISION FOR THE HULL & EAST RIDING LEAP AREA

The Hull & East Riding LEAP covers an area of some 2170 km^2, stretching from Flamborough Head to Spurn Point along the coast and including the Market Weighton Canal and River Foulness to the west. The major centres of population are Hull, Driffield, Beverley and Market Weighton with seasonal tourist centres at Bridlington, Hornsea and Withernsea and Skipsea.

The pressures of industry and large urban populations are lower in this area than in other catchments in the Ridings Area. There is however a large concentration of industry around the city of Hull and along the banks of the Humber Estuary.

KEY OPPORTUNITIES:-

- ***Improvements in water quality by reducing the pollution from sewage treatment systems, agriculture and industry.***
- ***Encourage waste minimisation initiatives towards the achievement of national waste reduction targets.***
- *Continued development of an overall Air Quality Strategy to facilitate consultation on local air quality plans.*
- ***Physical improvements of channels and habitat rehabilitation in collaboration with local communities and environment groups.***
- ***Impacts of water abstraction managed to optimise the benefits for all existing and potential users.***
- ***Recognition of the international importance of many areas of the coast as both a conservation resource and a recreation opportunity.***
- ***Continued and improved protection of people and property from flooding.***
- ***Effective links will also be established with the land use planning system to achieve integration of the aims of this plan with strategic and local land use plans.***

In order to achieve this vision, and the full potential of the local area the Agency will work with Local Authorities, industry, agriculture, environment groups, local action groups and the public in order to:-

i) achieve a balanced approach to all activities,
ii) be capable of a flexible response to the community at large,
iii) and achieve a sustainable use of the environment.

CONTENTS

PART 1 **Page**

1.0 Introduction

1.1	The Role of the Agency	3
1.2	Local Environment Agency Plans	4
1.3	Sustainable Development and the Agency	6

2.0 The Local Environment of the Hull & East Riding

2.1	Introduction	7
2.2	Geology	8
2.3	Topography	8
2.4	Rainfall Monitoring & Flow	11
2.5	Hydrogeology	14
2.6	Key Details	16

3.0 Protection through Partnership

3.1	Introduction	18
3.2	Key Partnerships	18

4.0 Issues and Proposals

4.1	Summary of Issues	23
4.2	Details of Proposals	26

PART 2

5.0 Uses, Activities and Pressure

5.1	Economic	59
5.2	Waste Management	69
5.3	Surface and Ground Water Abstraction	77
5.4	Flood Defence and Storage	82
5.5	Recreation & Amenity	90
5.6	Conservation	94

6.0 Current Status of the Local Area

6.1	Air Quality	98
6.2	Land - Waste Disposal	106
6.3	Water	111
6.4	Biodiversity	125

7.0 Appendices

A	Functional Aims & Strategies	131
B	European Directives	138
C	GQA Classification	141
D	Chemical Standards for River Ecosystem Classification	142
E	Glossary of Terms	143
F	Abbreviations	149

List of Figures

List of Figures	Title	Page
-	The Area and Administrative Boundaries	Cover
1	Geology	9
2	Topography	10
3	Hydrology	12
4	River Gauging Stations	13
5	Nitrate Sensitive Areas/Nitrate Vulnerable Zones	15
6	IPC Sites	63
7	Location of Fish Species & Approximate Extent of Angling	67
8	Scrapyards	73
9	Licenced sites	74
10	Industrial and Sewage Discharges & Fish Farms	76
11	Licensed Surface Water Abstraction 1992	78
12	Licensed Groundwater Abstraction 1992	80
13	Groundwater Constraints	81
14	Area Below Highest Predicted Annual Tide Level	83
15	Internal Drainage Districts	84
16	Land Drainage Pumping Stations	86
17	Long Distance Footpaths/Theme Routes	91
18	Principal Sites of Amenity, Recreation or Heritage Interest	93
19	Nature Conservation	96
20	Chemistry Classifications	112
21	Biological Water Quality	113
22	Stretches Failing to Meet Water Quality Targets	114
23	Flood Defence Land Use Classification	122

List of Tables

List of Tables	Title	Page
1	Typical Rainfall in the Hull & East Riding Area	11
2	Current Status of Local Authority Development Plans	60
3	Number of Discharges Consented in 1996/97	75
4	Air Quality Monitoring in Hull	98
5	Summary of Guidelines on Recommended Limits	105
6	Improvement Schemes for Estuarial Discharges	117
7	Improvement Schemes for Coastal Water Discharges	118
8	Flood Defence Standards of Service	123

PART 1

The purpose of this part of the LEAP is to introduce the role of the Environment Agency, examine the area covered by the plan in terms of natural and physical features and highlight some of the partnerships which the Agency is involved in to protect our environment.

The principal section of Part 1 identifies a number of issues and proposals for action which will form the form the basis for consultation.

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1.0 INTRODUCTION

1.1 THE ROLE OF THE ENVIRONMENT AGENCY

The Environment Agency for England and Wales came into being on 1st April 1996 and provides a comprehensive approach to protecting and managing the environment by combining the regulation of air, land, and water. Its creation is a major and positive step forward, merging the expertise of the former Waste Regulation Authorities, Her Majesty's Inspectorate of Pollution, the National Rivers Authority, and several smaller units from the Department of the Environment (DoE).

The Agency will provide high quality environmental protection and improvement and emphasise prevention, education, and vigorous enforcement wherever necessary. Our principal functions are pollution prevention and control, waste regulation, water resources, flood defence, fisheries, conservation, navigation, and recreation.

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.

The Agency takes a much wider view of environmental regulation than was possible for its predecessors, while remaining an independent, impartial, and firm regulator in their best traditions. Details of the aims and strategies of each of the functions of the Agency can be found in Appendix A.

1.2 LOCAL ENVIRONMENT AGENCY PLANS

In the DoE's Statutory Guidance under Section 4 of the Environment Act 1995 reference is made as to how the Agency should contribute towards the objective of attaining sustainable development. Local Environment Agency Plans (LEAPs) will be used as integrated planning tools to take an holistic approach to protection and enhancement of the environment and encourage work in partnership with the public, local authorities, organisations and public bodies.

LEAPs will also play a key role in

- the efficient and effective delivery of services through integrated activity and priority business planning
- promoting openness and accountability
- providing a focus for liaison and partnerships with other key stakeholders
- educating the local public on environment management issues.

The Agency seeks active input into the planning of LEAPs from individuals and organisations concerned with the environment, and would 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.

LEAPs are the successors to Catchment Management Plans produced by the former National Rivers Authority.

The Consultation Report

The Hull & East Riding LEAP 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 Hull & East Riding area.

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 Hull & East Riding 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

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

Sustainable development as described above requires 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 (see section 3.2.2). The DoE then published "Sustainable Development the UK Strategy" and "Biodiversity the UK Action Plan" (DoE 1994). The Government objective of securing sustainable development has been reinforced by the Environment Act 1995 and various planning policy guidance notes, for example PPG 12 "Development Plans and Regional Guidance" (DoE, 1992) which states that;

"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, 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 is producing a strategy on the way forward.

2.0 THE HULL & EAST RIDING LEAP AREA

2.1 INTRODUCTION

The Hull & East Riding LEAP covers an area of some 2170 km^2, stretching from Flamborough Head to Spurn Point along the coast and including the Market Weighton Canal and River Foulness to the west. The major centres of population are Hull, Driffield, Beverley and Market Weighton with seasonal tourist centres at Bridlington, Hornsea and Withernsea and Skipsea. The Humber Estuary is itself the subject of it's own LEAP.

Along the coast and Humber Estuary, there are numerous watercourses that drain to the North Sea and Estuary that are of significance. The coastal drains cover an area from Flamborough Head to Spurn Point, with the Gypsey Race the main watercourse to the coast, whilst the Humber watercourses drain almost the whole of the north bank of the Estuary. The area is of geological importance for the coastal cliffs and conservation value for brackish water lagoons and other areas of open water.

Along the coast there are 12 bathing beaches, designated under the EC Bathing Waters Directive, which encourages swimming and tourism at these locations. Recreational activities include walking and birdwatching with areas such as Spurn and Flamborough attracting many visitors, boating, canoeing, fishing, and other water sports. The coast is also important for commercial fisheries and industrial activities.

The headwaters of the River Hull are the most northerly Chalk stream system in Britain. The Chalk gives rise to a characteristic scenery of gently undulating land with a complex network of steep sided valleys and the cliffs at Flamborough Head and Bempton. The Chalk is an important aquifer with abstraction for public water supply and agriculture being the major uses of water resources in the catchment.

The River Foulness drains an extensive area and is significant in abstraction terms. A small outcrop of limestone around Brough, has been extensively developed for horticultural water supply, although pressure on groundwater resources in this small area has been reduced by the cessation of a large industrial abstraction.

In some parts of the LEAP area sewage treatment facilities are limited although work is programmed for improvements to some sewerage infrastructure and problem combined sewer overflows (CSO). The chalk aquifer is at risk from pollution via sewage, industrial discharges and agricultural activities, and measures must be taken to safeguard the valuable resource.

The pressures of industry and large urban populations are lower in this area than in other catchments in the Ridings Area. There is however a large concentration of industry around the city of Hull and along the banks of the Humber Estuary.

The low lying nature of the catchment makes flooding an ever present risk and the catchment area is protected against flooding from rivers and the North Sea by a complex network of drains and specially designed flood defences.

The Hull Barrier is designed to stop water from the Humber overtopping the defences along the River Hull in the city. In some areas, due to the low lying nature of land, runoff is pumped at a number of locations. Although cliff erosion is an issue in parts of the catchment, this is outside of the Environment Agency's responsibility except where it could lead to an increased risk of flooding.

2.2 GEOLOGY

The oldest rocks in the LEAP area are the Triassic mudstones which underlie the majority of the River Foulness catchment. These are covered by more recent glacial sand and gravel deposits. To the east of these deposits is a band of Jurassic rocks which contain some locally important limestone units. Overlaying these deposits is the Chalk which forms the Wolds northernmost extent of Chalk in Britain which runs from Yorkshire through eastern England to Dorset and Kent (*see figure 1*).

The Chalk is a white limestone that is very obvious in the cliffs of Flamborough Head, quarries and also as fragments in the thin soils that cover most of the Wolds. The tills (clay) sands and gravels of Holderness are a product of glacial deposition from the ice sheets of the Ice Age. The deposits along the buried cliff line in the Chalk around Driffield are particularly complex.

The soft glacial materials are subject to rapid erosion by the sea and there is longshore drift of the materials southwards that contributes to the formation/erosion of Spurn Point.

2.3 TOPOGRAPHY

The Wolds of Eastern Yorkshire form a distinctive area of higher land from the low lying Vale of York to the west and the Vale of Pickering to the north, with a very marked, often steep scarp slope to a height of around 200m. The topography is typical of Chalk landscapes. A gently rolling plateau falls eastwards towards the low flat area of Holderness, with a complex network of often steep sided and deep dry valleys that also generally run north-west to south-eastward, except for the more open eastward running valley of the Gypsey Race in the northern part of the catchment. The wide open aspect of the Wolds is emphasised by large arable fields and the relative sparseness of trees.

The Chalk is most noticeable where it outcrops into the north sea at Flamborough Head and spectacular vertical cliffs up to 100m high are found at Bempton. South of Bridlington the glacial tills of Holderness form a low cliff that is being rapidly eroded by the North Sea.

There is little surface drainage on the highly permeable Chalk of the Wolds. Where the Chalk disappears under the Holderness clays along a line from Bridlington to Driffield to Hull there are many springs that eventually combine to form the River Hull. The River Hull and Beverley and Barmston Drain have a complex two level drainage system taking the spring flows from the Chalk and also local land drainage from the heavy low lying glacial land of Holderness. This river is parallelled by a low level drainage system formed by the Beverley & Barmston Drain to the west and the Holderness Drain to the east.

HULL & EAST RIDING GEOLOGY MAP

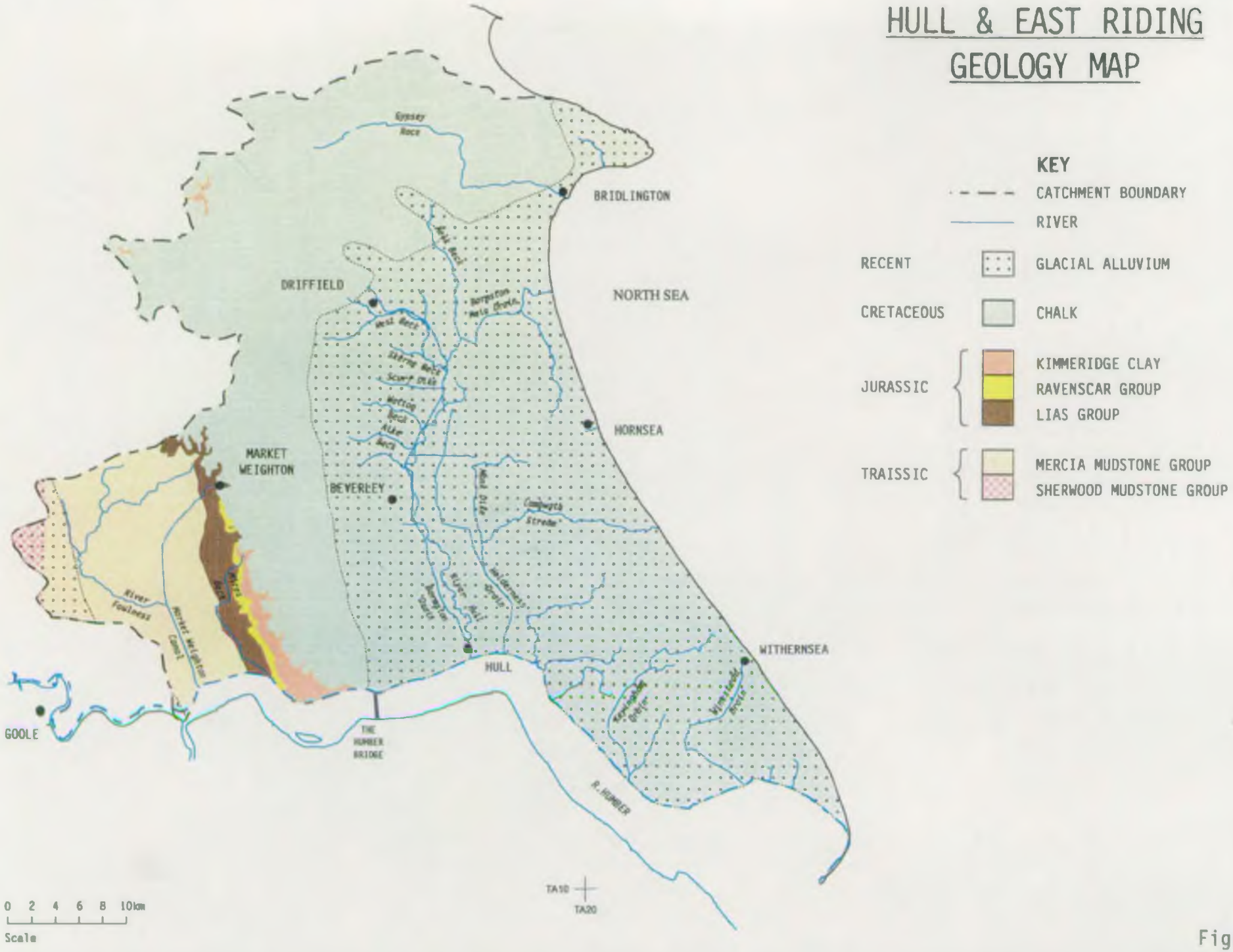


Figure 1

HULL & EAST RIDING TOPOGRAPHY

KEY

CATCHMENT BOUNDARY

RIVER

TIDAL LIMIT

HEIGHT ABOVE SEA LEVEL

BELOW 10M

10M TO 30M

30M TO 50M

50M TO 100M

100M TO 150M

150M TO 200M

ABOVE 200M

Figure 2

Eastern Holderness is drained by a complex network of drains that flow into the North Sea at a limited number of localities as the land along the coast is often 10m higher than that inland. *Figure 2* shows the topography of the Hull and East Riding area.

2.4 RAINFALL MONITORING AND FLOW

Rainfall Data

Figures for rainfall are available for a large number of sites throughout the Region, see *figure 3*. There are certain gauges that accurately represent the river catchments and some of the data goes back over many decades.

Table 1: Typical Rainfall in the Hull & East Riding Area

Location	Annual Ave.	Maximum	Minimum
High Mowthorpe	771mm	789mm	480mm
Tickton	618mm	704mm	390mm
Driffield	670mm	807mm	407mm
North Cave	660mm	816mm	460mm

There are at present nine sites where flows are monitored, these are shown on *figure 4*, and fall into three defined catchments as follows;

1. River Foulness at Holme House Farm
   Market Weighton Canal at Wholsea Grange
   Mires Beck at North Cave

2. Elmswell Beck at Little Driffield
   West Beck at Snakeholme Lock
   Driffield Canal at Snakeholme Lock
   Foston Beck at Foston Mill
   River Hull at Hempholme

3. Gypsey Race at Boynton

For all of the above sites there are comprehensive flow statistics available which can be utilised for the determination of problems within the catchment.

River Flow Data

The daily measured flow and level of water is available for sites on the major rivers. Key flow statistics are also available for a number of sites. Historic data goes back up to twenty years.

HULL & EAST RIDING HYDROLOGY

KEY

- CATCHMENT BOUNDARY
- SUB-CATCHMENT BOUNDARY
- RIVER
- TIDAL LIMIT
- RIVER LEVEL STATION
- RIVERFLOW GAUGING STATION
- RAINFALL STATION
- CLIMATE STATION
- R RTS STATION

Figure 3

HULL & EAST RIDING RIVER GAUGING STATIONS

KEY

- CATCHMENT BOUNDARY
- RIVER
- TIDAL LIMIT

RIVER GAUGING STATIONS

1. HOLME HOUSE FARM - FOULNESS
2. WHOLSEA GRANGE - M. W. CANAL
3. NORTH CAVE - MIRES BECK
4. LITTLE DRIFFIELD - ELMSWELL BECK
5. SNAKEHOLME LOCK - DRIFFIELD CANAL
6. SNAKEHOLME LOCK - WEST BECK
7. FOSTON MILL - FOSTON BECK
8. HEMPHOLME LOCK - HULL

Figure 4

2.5 HYDROGEOLOGY

The flow pattern of the River Hull is unlike other rivers in Yorkshire and is characterised by a hydrograph which responds slowly to rainfall and a high proportion of spring flow derived from the aquifer. This aquifer provides all of the public water supply in the northern part of the Wolds and around half the public water supply in the Hull area.

The Chalk is a complex aquifer but is characterised by high flows of groundwater along an enlarged fissure system that is in the zone of water level fluctuation. Water levels may vary by 10m under the Wolds area between early/late spring (highest levels) and autumn (lowest levels).

Recharge of the groundwater takes place during the winter when rainfall exceeds the evaporation with the quantity of recharge being dependent on the total winter precipitation, particularly heavy snowfall. The low volume of effective storage in the Chalk aquifer and the high flow along the fissure system means that groundwater flows rapidly to springs and is discharged into the surface water system of the River Hull.

The Chalk is an aquifer that is susceptible to drought conditions. Below average recharge in the winter is followed by below average spring flows and in turn below average flows in the River Hull during the following summer. After a sequence of low recharge levels, borehole yields may be reduced considerably because of dewatering of fissure systems. The reliable yield of boreholes during drought may be considerably lower than the normal yields.

The thin soils of the Chalk allow high infiltration rates and also high potential for leaching chemicals into the groundwater particularly nitrates from agricultural activities.

The aquifer is susceptible to several pressures and there is particular risk to the groundwater from pollution due to agricultural, industrial, development and waste disposal activities. It is necessary to protect the Chalk area, especially from nitrate pollution and at present groundwater vulnerability maps are being prepared (*figure 5*). Management of sources in Nitrate Sensitive Areas (NSA) and Nitrate Vulnerable Zones (NVZ) takes priority and the Chalk groundwater model will be used as a basis for a water resources strategy for the Chalk.

HULL & EAST RIDING NITRATE SENSITIVE AREAS/ NITRATE VULNERABLE ZONES

KEY

- CATCHMENT BOUNDARY
- RIVER
- TIDAL LIMIT
- NITRATE VULNERABLE ZONES (under construction)
- NITRATE SENSITIVE AREA
- PILOT SCHEME NITRATE SENSITIVE AREA

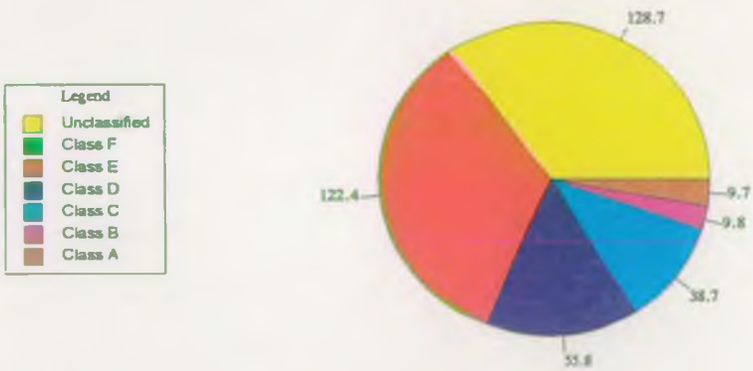
Figure 5

2.6 KEY DETAILS

Area:	2170km^2
Counties:	East Riding of Yorkshire
District Councils:	Administrative boundaries are shown on the map in the front cover.
Main Towns:	Hull, Beverley, Driffield, Bridlington, Hornsea, Withernsea, Market Weighton
Water Companies:	Yorkshire Water Plc
Canals	Market Weighton Canal, Leven Canal, Driffield Canal, Beverley Beck

Length of River and Canal Classified

1995



Flood Defences:

Length of designated Main River:		385 km
Length of Flood Defences on Main River		360 km
Number of People and Property Protected from Flooding:		10,300 House Equivalents
Major Installations:	The Hull Barrier	
	Outfall Sluices	9
	Pumping Stations	9
	Gauging Stations	6

Authorisations :

Total Number of Licensed River Abstractions as at end of March 1997.	**122**
Total Number of Licensed Groundwater Abstractions as at end of March 1997.	**353**
Total Number of Licensed Spring Abstractions as at end of March 1997.	**8**
Total Number of Consented Industrial Discharges as at end of March 1997.	**73**
Total Number of Consented Sewage Discharges as at end of March 1997.	**675**

Water Resources:

Typical River Flows (m^3/sec)-

Boynton (Gypsey Race)

Summer	0.02
Winter	0.3
Summer Min	0

Hempholme (River Hull)

Summer	2
Winter	6
Summer Min	0.3

Holme House (River Foulness)

Summer	0.2
Winter	1.0
Summer Min	0.01

North Cave (Mires Beck)

Summer	0.1
Winter	0.3
Summer Min	0.01

1m^3/s = 1 cubic metre per second
(1 cubic metre = 220 gallons)

3.0 PROTECTION THROUGH PARTNERSHIP

3.1 INTRODUCTION

Much of the day to day work of the Agency is aimed at protecting the environment through education, prevention and environmental improvement as well as the use of legal powers.

The LEAP primarily addresses environmental problems which are highlighted as issues in section 4, and is not intended to incorporate all activities undertaken by the Agency. Much of this routine work undertaken by the Agency is to fulfil its statutory duties and responsibilities. Examples include routine inspection at landfill sites to ensure licence conditions are being complied with anti poaching activities by Agency bailiffs, routine river sampling to detect trends in water quality and site visits to factories/sewage works etc to ensure authorisations are being complied with.

The Agency recognises that it is not the only body operating in the field of environmental protection and improvement and that our responsibilities often overlap with those of other organisations. The Agency is well placed to influence many of the activities affecting the environment through the Environment Act 1995 and other legislation.

Where appropriate the Agency works with partners to achieve environmental protection and improvements. Much of this co-operation goes on at a day to day level between officers in the field and is not of a formal nature.

In some cases the Agency does get involved in more formal partnerships and some examples of those which are relevant to this LEAP area are outlined below.

The Agency is working closely with Local Authorities in particular to ensure this happens and 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.

3.2 KEY PARTNERSHIPS

3.2.1 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.

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

Regular meetings between the Agency and the local authorities, viz East Riding of Yorkshire Council and Hull City Council have proved beneficial for all concerned. This has enabled the relevant functions within the Councils to work together on problems where a concerted effort is required. Good examples are joint meetings with Agency staff and public protection staff of the Council on pollution incidents relating to public health.

3.2.2 Local Agenda 21

Local Agenda 21 is an initiative which has come out of agreements signed at the Earth conference in Rio by representatives of 150 countries including the UK government. It is intended to achieve sustainable development at a local level.

The lead in developing Local Agenda 21 is taken by Local Authorities to encourage wider access to environmental information and adoption of sustainable development principles at the local level. In the Hull and East Riding LEAP area, East Riding of Yorkshire Council is committed to the principles of Local Agenda 21 and are in the process of an 'Agenda 21' environmental strategy.

3.2.3 Air Quality

Under the Environment Act 1995 (EA95) the responsibility for air quality has been given to Local Authorities, who have a duty to assess the local air quality. They are also responsible for the direct regulation of the releases to air from less complex industries known as 'Part B' Processes. The Agency has responsibility for the large, complex and potentially most polluting industries (Part A processes) under a scheme of regulation known as Integrated Pollution Control (IPC). Local Authorities will be required to review present and future air quality against 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 statutory consultee. The Agency intends to generate a "Part A" processes air strategy which complements local authority and national air quality objectives and strategies for the Hull and East Riding LEAP area.

3.2.4 Waste Management

At present the recovery and disposal of controlled waste in England and Wales is regulated by local authorities through the planning process, in consultation with the Agency and the Health and Safety Executive.

The Town and Country Planning Act 1990 requires LPA's to have due regard to national policies in drawing up their development plans. The government white paper "Making Waste Work" outlining the Waste strategy for England and Wales, is an advisory document but it is an important source of guidance for all local planning authorities.

The Agency's main objective in relation to the management of waste, is to adopt an integrated approach in achieving consistent standards for waste management practices, involving the treatment, storage, movement and disposal of controlled waste.

Protection of land is achieved through regulation of waste treatment, storage and disposal facilities via the waste management licencing system administered by the Agency. This system requires the Agency to protect the public and their environment from the potentially adverse effects of mis-managed waste, and to ensure that waste is disposed of in accordance with legislative requirements and best practice. These responsibilities stem mainly from the Environmental Protection Act 1990, although some provisions pre-date that, most notably the registration of waste carriers.

3.2.5 Flood Defence

The Agency has specific powers relating to "main rivers" (see definition on page 145) which enable it 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. In addition to works on 'main rivers' the Agency also has regulatory powers to control weirs and culverts which would affect flows on ordinary watercourses.

Internal Drainage Boards (IDBs) have flood defence powers within their districts and there are nine IDBs in this LEAP area. Local authorities have similar powers on other watercourses.

The appropriate legislation relating to watercourses is to be found in The Land Drainage Act 1991.

3.2.6 Agricultural Development & Advisory Service (ADAS)/Ministry of Agriculture Fisheries & Food (MAFF)

Joint (Agency and ADAS) proactive prevention campaigns within catchments are already recognised as being a major contribution to the significant drop in the number of agricultural pollution incidents within the Catchment. In the Hull Catchment, it is proposed that approximately three hundred farms be visited by ADAS during 1997/98. Consultants at ADAS will meet with individual farmers to discuss their Farm Waste Management plans and to ensure that there is compliance with the Code of Good Agricultural Practice (COGAP). This will be a free service to farmers. It is anticipated that a further drop in the number of agricultural incidents will be attained due to the pollution prevention campaign.

3.2.7 Emergency Services

The Agency will continue to liaise with the fire service, coastguard and the police on all matters relating to emergencies, incidents and responses by the Agency. This is to ensure that a sustained service by all organisations is given to the public and to protect the aquatic environment during major or potential pollution incidents. One such initiative has been the placement of oil recovery equipment on the fire service tenders, so that immediate deployment can be made upon arrival at a significant oil spillage by the fire service.

3.2.8 Education

The Agency has close links with all educational institutions within the East Yorkshire area, in particular the University of Hull and the Bishop Burton College. In addition, educational visits by field staff to primary and secondary schools have proved a valuable lesson in educating the younger generations in the value of conserving the environment. It is the desire of the Agency to sustain these links so that all parties can have a clear understanding of each others needs.

3.2.9 Industry

Liaison meetings between industrial managers and the Agency have been very important in terms of prioritising and instigating remediation schemes at factory sites impacting on the environment. The Agency will continue to take part in all matters relating to waste minimisation and ensure that the environment is not only protected, but enhanced where necessary. Action by the Agency and industries at factories along the tidal River Hull has brought about significant improvements in the aesthetic quality and water quality of the river system. The River Hull has been cleaned up considerably over the past few years which is reflected by the increase in numbers of water users (anglers, boaters etc).

3.2.10 Yorkshire Water Services (YWS)

Significant capital investment on YWS assets is required during the next 5-10 years and the Agency recognises that these investments have to be made to end sewage pollution from unsatisfactory sewage treatment works and combined sewer overflows.

Only by close liaison with YWS will there be significant improvements in water quality in the Catchment.

YWS has to produce its Asset Management Plan Three (AMP3) as part of the Period Review of Charges for 2000-2005 made by the Office of Water Trading (OFWAT). The Agency will look for schemes to be included in the company's next Asset Management Plan (AMP3) to ensure that further improvements to the water environment are achieved and maintained. Such schemes will be subject to cost-benefit assessment except where required for a statutory purpose eg compliance with an EU Directive.

3.2.11 Conservation

The Agency has a close working relationship with many landowners in the area. The Agency has promoted a number of joint projects to improve fisheries and protect habitats either directly or through the Farming and Wildlife Advisory Group (FWAG).

Many parts of the area have high conservation value and the Agency will work closely with English Nature to promote protection of the most important areas and rehabilitation of degraded sites. In some cases the Yorkshire Wildlife Trust are owners of important conservation sites and the Agency is committed to working with the Trust to protect these sites.

On the coast we have a long history of involvement with both statutory and voluntary bodies involved in coastal management. The Agency is part of the steering group for the Flamborough Sensitive Marine Area Project.

The Agency is committed to working with all bodies and individuals concerned with the wise use of the countryside for sport and recreation.

4.0 ISSUES AND PROPOSALS

Throughout the preparation of the Consultation Report a number of issues have been identified which require consideration by those with an interest in the Hull & East Riding LEAP area. The issues have been identified by

- considering specific incidents and instances of public complaint
- use of local knowledge of Agency staff and others
- comparing the current status of the LEAP area against local and national targets and directives
- consultation with the East Yorkshire Area Environment Group

The objectives and proposals are the views of the Environment Agency and those consulted and do not constitute policy statements.

Consultees are asked to comment on the following objectives and proposals together with any new ideas or suggestions which they may have.

Issues will be presented in the following format:

Sections A-K	-	Area of concern

↓

Issues	-	What the perceived problem/concern is

↓

Background	-	Information regarding why the issue is important
Proposals	-	Proposals which could be developed to address the issue.
Responsibility	-	Who is involved

The timescales and costs will be established after this consultation stage, and will be provided in the Hull & East Riding Action Plan, due to be published in early 1998/99.

4.1 SUMMARY OF ISSUES

A	**Flood defences in a number of locations need to be improved to meet indicative standards**
Issue 1	*Defences in some parts of the LEAP area are below standard or are in need of major refurbishment.*
Issue 2	*The Environment Agency has powers to undertake flood defence work only for main river and cannot address some known problem areas on other watercourses.*
Issue 3	*Parts of the area are vulnerable to tidal flooding from the Humber due to some sections of the existing defences having poor structural integrity or being below the desired standard of protection taking into account past and future rises in sea level.*
Issue 4	*Rises in sea level are resulting in higher low tide levels which affects the ability of gravity drains to discharge to the Humber.*
Issue 5	*Seven major pumping stations owned by the Environment Agency within the LEAP area are between 20 and 30 years old. In the event of failure of any one of the stations, large areas of prime agricultural land would be affected.*
Issue 6	*There is occasionally conflict between farming interest and conservation interest with regard to watercourse maintenance.*

B	**Waste Minimisation has potential to reduce the consumption of raw materials, energy and water, and reduce pollution**
Issue 7	*Encourage the adoption of Waste Minimisation Techniques*
Issue 8	*Best practicable environmental options can be established for further sites and processes using the 3Es methodology.*
Issue 9	*Producer Responsibility will encourage the recovery and recycling of waste from consumer goods.*
Issue 10	*The introduction of the Landfill Tax provides incentives for waste minimisation but may lead to increased incidents of flytipping.*

C	**Contaminated land within the LEAP area requires remediation**
Issue 11	*The Agency has a key role in gaining the remediation of contaminated land.*

D	**The area has many important environmental resources which will require protection, improvement and development**
Issue 12	*Future development could impact on the environment unless the Agency maximises its influence on the land use planning system in liaison with Local Planning Authorities.*
Issue 13	*There are extensive opportunities to improve the environmental status of the catchment by working in partnership with others.*

E The Agency will maintain a proactive approach to strategic air quality management

Issue 14 Overall strategies for the releases from Part A processes require development.

Issue 15 An overall air quality strategy is needed to enable the Agency to act as a consultee on local air quality plans.

F Integrated water management of the catchment could be improved, based on a study currently underway on the upper River Hull

Issue 16 Further investigations on the management of the Chalk aquifer and the spring fed headwaters of the River Hull are underway.

Issue 17 The West Beck is heavily used for fish farming.

Issue 18 The high quality fishery in the upper River Hull requires protection from pollution, low flows and modifications to the channel.

G Regulatory practices require to be reviewed regularly

Issue 19 Reviews are needed of existing and proposed regulatory practices.

H There is much potential for the Agency to improve waste management in the Hull & East Riding Area

Issue 20 Supervision and monitoring programmes for the land spreading of waste need to be determined.

Issue 21 Standards of operation in scrapyards can be improved.

Issue 22 The area is important for the import and export of waste.

Issue 23 Information is required to highlight waste disposal needs in the area and to identify opportunities to promote the benefits of waste minimisation.

I Many parts of the catchment are vulnerable to pollution of surface and groundwater

Issue 24 The Chalk aquifer is especially at risk from agricultural activities.

Issue 25 Timescales for improvements in sewage treatment and the premature operation of Combined Sewer Overflows (CSO) will affect the water quality and the designated bathing beaches on the coast and risk contravention of the Urban Waste Water Treatment Directive (UWWTD).

J Strategies for recreation in the area are, as yet, poorly developed

Issue 26 There are opportunities to provide improved facilities at many locations, including for the disabled.

Issue 27 There are unresolved issues relating to navigation in the area.

K There are significant opportunities for the Agency to be involved in improving the integrated management of the marine environment.

Issue 28 The Agency will need to develop it's role in coastal issues in liaison with the relevant agencies and bodies.

4.2 DETAILS OF PROPOSALS

A	**Flood defences in a number of locations need to be improved to meet indicative standards**

Issue 1 - Defences in some parts of the LEAP area are below standard or are in need of major refurbishment.

Background

In some parts of the LEAP area, particularly the non tidal River Hull and tributaries, flood defences do not currently meet the indicative standards of protection and need to be improved. An ongoing programme of work ensures that defences throughout the area are constructed or improved to achieve the desired level of protection. When devising that programme, due account must be taken of the areas at risk and the economic justification.

To complement those works, a significant level of maintenance is required on all the defences, in order to ensure that they continue to offer the standard of protection they were designed for. Maintenance ranges from the mowing of flood banks, pruning vegetation, and control of aquatic weed to maintaining the fabric of pumping stations and control structures, clearing debris from watercourses and repairing culverts.

Studies to assess improvements required enables potential areas of upgrading of flood defence standards to be ascertained. Capital works and remedial schemes will lead to improvements in the standards of defence and an increased level of protection.

Proposals

- Undertake a multi functional study on the upper sections of the River Hull and utilise the results to design and build sustainable defences, wherever economically viable, that are compatible with the conservation value and other uses of the river.
- Undertake studies to assess improvement options on Watton Beck.
- Carry out approved capital works to improve the operation of the flood gate at Beverley Beck.
- Complete Phase 2 of the remedial scheme for flood defences in Hull between Stoneferry and Sutton Bridge on the River Hull and continue to monitor the remaining sections.
- Commence implementation of the comprehensive scheme for the non tidal River Hull.
- Continue to maintain flood defences and assets to an appropriate standard.

Responsibility
Environment Agency

Issue 2 - The Environment Agency has powers to undertake flood defence work only for main river and cannot address some known problem areas on other watercourses.

Background

The Environment Agency has powers to act to undertake flood defence works only on stretches of river which are designated as 'main river'. The powers to undertake flood defence works on other stretches of rivers generally lie with local authorities or internal drainage boards and riparian owners. This can lead to an inconsistent approach to flood protection with, for example, different standards of protection being afforded on the same watercourse. Some areas exist where there are known flooding problems but presently the Environment Agency has no powers to act. North Cave Beck and Market Weighton Beck are two examples within the LEAP area.

Working closely with other parties who have a responsibility for stretches of river outside Agency remit encourages a common approach to the provision of flood defences

Proposals

- Work with responsible parties in order to maximise the benefits of flood defence and encourage sustainable practices in managing watercourses throughout the catchment.

Responsibility
Environment Agency
Internal Drainage Boards
Local Authorities
Farmers
Landowners

Issue 3 - Parts of the area are vulnerable to tidal flooding from the Humber due to some sections of the existing defences having poor structural integrity or being below the desired standard of protection taking into account past and future rises in sea level.

Background

Large areas of low lying land within the Hull and East Riding LEAP area lie below maximum high tide levels and are protected from flooding from the Humber by defences consisting of a combination of earth embankments, steel sheet piling and concrete or brick walls. Improvements in methods of analysis of maximum possible flood levels and predictions for future sea level rises, have seen the need for reappraisal of the long term standards of flood defence provided along the Humber. The long term trend of rising sea levels relative to land levels is set to continue due to the combined effects of global warming and sinking land levels.

The initial study has looked at defence levels required to cater for sea level rises up to the year 2045 and has also identified some sections of defence whose structural condition is poor.

New proposals regarding flood defences should not compromise existing defences and should take the opportunity to maximise environmental benefits, whilst ensuring the most cost beneficial flood defence schemes are designed.

Proposals

- Continue to refine predictions for maximum flood levels and future sea level rise and update requirements for flood defence standards accordingly.
- Identify and promote works required to high risk flood areas - eg Hull City Frontages, Salt End. (NB these proposals will be covered in detail by the Agency's plans for the Humber).
- Ensure continued reliable operation of the Hull Tidal Surge Barrier.

Responsibility
Environment Agency

- Review results of Hull City Council's proposed River Hull barrage feasibility study.

Responsibility
Environment Agency
Hull CC

Issue 4 -Rises in sea level are resulting in higher low tide levels which affects the ability of gravity drains to discharge to the Humber.

Background

As sea levels rise generally, low tide levels also increase. The long term trend of rising sea levels relative to land levels is set to accelerate due to the combined effects of global warming and sinking land levels. This affects the ability of a number of watercourses in the district to drain to the Humber by gravity because the time period during which the drains can discharge within the daily tidal cycles is reduced. Because in some cases, the drain gradients are very flat and the majority of the arable fields adjacent to the watercourses have artificial underground drainage systems, the efficiency of those systems may be affected, leading to waterlogging during particularly wet periods. Raising of low tide levels also results in deposition of silt which affects the efficient operation of the actual outfalls and will eventually lead to complete blockage.

Studies which may be carried out to look at long term siltation patterns can identify specific problems and make assessments regarding increased flood risk, although there are disadvantages to this in terms of the cost and time required to undertake the studies.

Proposals

- Undertake a study to establish long term siltation patterns and rates.
- Monitor the rates of siltation and increase maintenance activities as necessary, to ensure as efficient operation of outfalls as possible.
- Undertake studies to assess the possibility of providing pumped drainage at certain outfalls.

Responsibility
Environment Agency

Issue 5- Seven major pumping stations owned by the Environment Agency within the LEAP area are between 20 and 30 years old. In the event of failure of any one of the stations, large areas of prime agricultural land would be affected.

Background

Large low lying areas of the District are totally reliant on pumping to provide land drainage. Reliability of each station is therefore paramount and any failure of a pumping station during the flood season is likely to result in flooding, affecting large areas of prime agricultural land.

Given the age of the stations, the risk of failures and minor breakdowns is likely to increase with time. In general because of the size of each individual pump, providing emergency cover by importing temporary pumps is impractical.

In addition, pumping costs form a large part of the Agency's annual revenue expenditure, however the stations were designed during an era when little thought was given to minimising energy costs. Studies to assess the condition of each station and prioritise a programme of refurbishment as appropriate would ensure works are carried out in order of importance.

Proposals

- Undertake studies to assess the current condition of each station and prepare a prioritised programme of refurbishment as appropriate.
- Implement refurbishment programme.

Responsibility
Environment Agency

Issue 6- There is occasionally conflict between farming interest and conservation interest with regard to watercourse maintenance.

Background

The interests of flood defence and conservation are sometimes at odds with each other as regards some maintenance activities such as the cutting of weeds and reeds within the channel, cutting back bankside growth such as bushes and trees and the cutting of grass on embankments.

Whilst for instance it is desirable to retain some reed within the channel to provide habitat for fish and other wildlife, excessive accumulation obstructs the flow and raises water levels, thereby increasing flood risk.

Grass needs to be cut on the embankments to enable inspection for damage and to promote better growth, however at certain times nesting birds occupy those areas and are affected by the operation.

Bushes and trees growing on the channel side slopes also provide aesthetic appeal and provide shelter for birds, however they may also obstruct flow and hinder machine access for maintenance.

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. Water levels are important for agriculture which is a significant activity within the Hull & East Riding LEAP area. Conservation interests and wildlife may be dependant on an appropriate water management regime and it is necessary to ensure a balance is maintained for areas which have a conservation interest and the control of water levels is important eg Pulfin Bog, the River Hull Headwaters and Boynton Willow Garth SSSIs.

Proposals

- Establish best working practices to promote conservation interest whilst still retaining adequate standards of flood defence.
- Prepare the statutory Water Level Management Plans required by MAFF for SSSIs.
- Develop flood defence maintenance management plans for other non statutory watercourses.
- Undertake studies of all main river watercourses and flood defences to establish those with particular conservation interests.
- Programme maintenance works to minimise their effects on the environment.

Responsibility
Environment Agency

B Waste Minimisation has potential to reduce the consumption of raw materials, energy and water, and reduce pollution

Issue 7 - To Encourage the adoption of Waste Minimisation Techniques

Background

Waste minimisation demonstrations project, including the Humber Forum one, have shown the benefits to business and the environment of increasing the efficiency of process, hence reducing the generation of gaseous, liquid and solid wastes at source. The systematic application of waste minimisation will also reduce the hazard of waste generated and reduce the risk of the occurrence of one-off pollution incidents.

The Humber Resource Efficiency Centre is the body established by the Humber Forum. Its purpose being to promote waste minimisation within the area and to give inexpensive consultations and advice to companies wishing to undertake waste minimisation. This Centre is a non profit making organisation.

The Environment Agency has recently produced a manual titled Waste Minimisation and Waste Management - An Environmental Good Practice Guide for Industry.

It makes good business and environmental sense to manage and reduce resource consumption and thus minimise waste. Future EU legislation and UK government policies will continue to bring pressure to bear on businesses reflecting on going concern for the environment. The principles of sustainable development and the need to take a long term view will lead to greater controls on the use of resources and on the management and control of waste.

Waste minimisation principles should also be applied by companies wishing to cut down on the amount of packaging they handle. The recently introduced 1997 Packaging Regulations encourage companies to do this as reducing their obligated packaging will reduce the company's costs.

Proposals

- Encourage the use of 'The Good Practice Guide'.

Responsibility
Environment Agency
Local Authorities
Industry

- Work with industry, business support organisations to promote waste minimisation.

Responsibility
Environment Agency

- Extend waste minimisation concepts to agriculture, the service sector and domestic activities.

Responsibility
Environment Agency
Local Authorities, MAFF

Issue 8 - Best practicable environmental options can be established for further sites and processes using the 3Es methodology.

Background

One waste minimisation initiative is the Agency's 3 Es project (Emissions, Economics and Efficiency). This methodology is being used by firms with processes currently under Integrated Pollution Control to optimise their processes. The methodology was trialed at a number of sites including J L Seaton & Co Ltd (part of the Croda International Group) in Hull.

As with other waste minimisation techniques, it has been shown that there are benefits to the environment through reduced emissions to air, land and water and financial benefits to companies. The Agency is encouraging appropriate firms to adopt the 3 Es process.

Proposals

- Assess potential in the Hull & East Riding LEAP area for adoption of the 3Es.
- Encourage appropriate companies to adopt the 3Es methodologies.

Responsibility
Environment Agency

Issue 9 - Producer Responsibility will encourage the recovery and recycling of waste from consumer goods.

Background

Producer Responsibility will be a key tool in the future for promoting the recovery of value from waste. The Producer Responsibility powers set out in the Environment Act 1995 enabled Regulations to be introduced concerning the legal obligation for the recovery of value from packaging waste and the targets that will need to be met. The UK national recovery target is 52% of packaging waste by 2001.

The Packaging Regulations will affect companies who perform a packaging activity, handle and 'own' more than 50 tonnes of packaging per year and have a turnover of over £5 million, falling to £1 million in the year 2000. The regulations cover packaging made from glass, aluminium and steel, plastic and paper/fibreboard. Wood packaging does not pick up on obligation until the year 2000.

The Packaging Regulations are the first part of the "Producer Responsibility" to be actioned. "Producer Responsibility" initiatives are being promoted for tyres, vehicles, newspapers, electric goods and other used products, although not all areas will be the subject of legislation.

Proposal

- Review the requirements of Producer Responsibility as Regulations and initiatives are formulated.
- Keep industry abreast of Producer Responsibility and the implications for their businesses.
- Provide industry with advice.

Responsibility
Environment Agency

Issue 10 - The introduction of the Landfill Tax provides incentives for waste minimisation but may lead to increased incidents of flytipping.

Background

On the 1 October 1996 a new Landfill Tax was introduced, the purpose of which is to ensure that landfill costs reflect environmental impact, thus encouraging business and consumers to produce less waste, recover value from more of the waste that is produced and dispose of less waste to landfill. The tax is collected by Customs and Excise.

The Landfill Tax is paid by landfill operators although it is expected that the costs may be passed on to the waste producers. Currently a charge of £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, is applicable to all waste disposed of in landfill sites which are subject to the licensing requirements under the Environmental Protection Act 1990. There is evidence to suggest this has resulted in an increase in fly-tipping by waste carriers in an effort to avoid disposal charges. "Fly-tipping" is the term used to describe the illegal deposit of waste.

Proposals

- Ensure fly tipping is a priority enforcement function.
- Increase public awareness of carrier registration and the duty of care regulations in a bid to reduce fly-tipping.
- Inform and educate industry, that by minimising waste landfill costs will be reduced.
- Ensure all exempt activities in the Hull & East Riding LEAP area are registered.
- Ensure registered exempt facilities comply with the criteria given in the Waste Management Licencing Regulations 1994
- Carry out surveillance of known problem (fly-tipping) areas and take enforcement action where necessary.

Responsibility
Environment Agency
Local Authorities

C Contaminated land within the LEAP area requires remediation

Issue 11 - The Agency has a key role in gaining the remediation of contaminated land.

Background

As a result of centuries of industrial and commercial activity the East Yorkshire area has been left with a legacy of environmental degradation. Contamination of soils and waters as a result of such activities, can pose a direct threat to human health, water resources and to other ecological systems. Utilising the powers and responsibilities conferred by recent environmental legislation, steps should be taken to undertake and encourage the remediation of contaminated land in order to achieve sustainable environmental benefits.

The Environment Agency has specific duties under the Environment Act 1995 with respect to contaminated land; which is defined as "any land which appears to a local authority to be in such a condition that water pollution or significant harm is being or is likely to be caused". These duties include the provision of advice to local authorities on the remediation of contaminated land, and the collection of information for inclusion in a report on the "state of contaminated land within England and Wales."

There is also a requirement of the Environment Agency to undertake the role of "Enforcing Authority" at sites which have been defined as "special" in line with the definitions given within the regulations.

Effective liaison with local authorities ensures consistent development and application of the local authority contaminated land inspection programme, and provides information on:-

i the 'state of contaminated land' within the area;

ii prospective 'special sites' for joint clean up bids at 'orphan sites' where the polluter cannot be found.

Proposals

- Initiate a prioritised programme of remediation of contaminated land sites subsequently designated as 'special'.

Responsibility
Environment Agency

- Create an efficient scheme of liaison and consultation with local authorities.
- Through partnership with local authorities, contribute to the formulation of bids for supplementary credit approval from DoE, to allow 'orphan sites' (sites where the polluter cannot be found) to be remediated.

Responsibility
Environment Agency
Local Authorities

D The area has many important environmental resources which will require protection, improvement and development

Issue 12 - Future development could impact on the environment unless the Agency maximises its influence on the land use planning system in liaison with local planning authorities.

Background

Development can take place without due consideration of the impacts or potential impacts on the environment. If problems are manifested after development has taken place, solutions can often be difficult to achieve and expensive. Positive development control at the planning stage can enable measures to be incorporated into planning consents and therefore developments, which can benefit the water environment or reduce the impacts of flooding or pollution incidents.

Some planning authorities have included presumption against residential development beyond the limits of mains water supply where water resources are of limited availability. In the two Local Authority areas in the Hull catchment severe over capacity of the sewerage systems exists, for example in the Holderness area where there are approximately 17 outlying villages that have rudimentary sewage treatment facilities.

Although the Environment Agency recommends the limitations of new development in such areas until treatment facilities are suitable, it is recognised that areas may have been designated for future residential in line with local plans. It is essential therefore that Environment Agency not only gives advice at a local level but at policy level in order that our commitment and duties to the water environment are recognised and complemented.

Proposals

- Encourage the Local Planning Authorities to include policies within their strategic plans which will assist the Agency in protecting the environment. Promote greater joint awareness of the benefits of shared objectives.
- Participate fully in the development control process in order to safeguard people, property and the environment and encourage environmental enhancement as part of the Agency's duty under the Water Resources Act 1991 and Environment Act 1995.
- Carry out survey work under section 105 of the Water Resources Act 1995 on watercourses identified as being under pressure from development.
- Ensure the Agency's Local Environment Agency Plans (LEAPs) are made available to interested parties and seek to ensure the concepts of integrated planning are taken up by the relevant organisation.

Responsibility
Environment Agency
Local Planning Authorities

Issue 13 - There are extensive opportunities to improve the environmental status of the catchment by working in partnership with others.

Background

Land drainage, agriculture intensification, poor water quality and urban development adjacent to watercourses and the coast has led to the loss of many of the natural and semi-natural ecological features found in the catchment. This has decreased the overall value of the resource as well as adversely affecting the opportunities for use of the catchment.

The LEAP area is one of the least wooded counties in England and woodlands associated with the watercourses are rare.

Improving water quality as well as an increasing public perception of a need for restoration of the environment present great opportunities. The Environment Agency has already forged strong links with local organisations involved in conservation work in order to promote collaborative improvement work.

Biodiversity action plans arising from the 1992, Earth Summit at Rio de Janeiro have identified a number of species and habitats of key importance in the LEAP area. The Agency is the contact point for 12 threatened species and one of the habitats (Chalk streams) and has undertaken to draw up and promote action plans for these.

The Agency is the operating authority for a number of Sites of Special Scientific Interest (SSSI) which require the production of Water Level Management Plans.

Proposals

- There are opportunities for ecological enhancements in association with flood defence schemes, such as High Eske and Watton borrow pits.

Responsibility
Environment Agency

- Continued provision of Barn Owl nesting sites on the River Hull in collaboration with the Hawk and Owl Trust. Assess the opportunities to extend the project to link with similar initiatives elsewhere in the LEAP area.

Responsibility
Environment Agency, Hawk and Owl Trust, Landowners

- Carry out further investigations in collaboration with Yorkshire Wildlife Trust into the hydrological regime at Pulfin SSSI and assess the options for remediating the observed reduction in water levels in the springs. Work with English Nature and other interested parties to prepare water level management plans to ensure appropriate water levels.

Responsibility
Environment Agency, Yorkshire Wildlife Trust, English Nature

- Work in collaboration with English Nature to promote actions to address joint responsibilities under the Biodiversity action plans. In liaison with English Nature, implement the national Memorandum of Understanding on River Sites of Special Scientific Interest by March 1998.

Responsibility
Environment Agency, English Nature

- Collaborate with the Local Authorities in the implementation of the Agenda 21 process.

Responsibility
Environment Agency, Local Authorities

- Continue to promote a joint project with Farming and Wildlife Advisory Group (FWAG) on the River Hull to encourage environmentally sensitive land use especially adjacent to watercourses.

Responsibility
Environment Agency, FWAG, Landowners, MAFF

E The Agency will maintain a proactive approach to strategic air quality management

Issue 14 - Overall strategies for the releases from Part A processes require development.

Background

Air quality is the responsibility of local authorities. The Agency has a specific remit to regulate releases from Part A processes under the Environmental Protection Act 1990(ie those prescribed under IPC) and will liaise with local authorities to ensure that Agency driven activities are complementary with local air quality objectives.

Proposals

- Develop an overall air quality strategy for releases from Part A processes in the LEAP area. The strategy needs to take into account the UK National Air Quality Strategy.
- Develop actions to apply the strategy to Part A processes in the LEAP area. Use the strategy in acting as a consultee to local authorities on local air quality plans and objectives based on the contribution from Part A processes.
- Encourage local authorities to develop a database for the releases from Part B processes.
- Assess the monitoring programmes for Part A processes in the light of process impacts on local air quality.

Responsibility
Environment Agency
Local Authorities

- Undertake an annual review of the strategy taking due regard of Part A process impact on local air quality. Refine the strategy and actions if required.

Responsibility
Environment Agency

Issue 15 - An overall air quality strategy is needed to enable the Agency to act as a consultee on local air quality plans.

Background

Under Part IV of the Environment Act 1995 the Government introduced the concept of a national air quality strategy with subsequent duties on both local authorities and the Agency. In section 80(1) the Secretary of State for the Environment is required to prepare a national air quality strategy and publish this as soon as possible. The strategy will include the assessment and management of air quality, may refer to international obligations, will cover the whole of Great Britain and must include standards for air quality and measures required to be taken by the regulatory bodies. It is a requirement on the Agency to have regard to the air quality strategy in discharging its pollution control functions.

Proposals

- Review the national air quality strategy and implement actions within the LEAP area to address local issues.

Responsibility
Environment Agency

F	**Integrated water management of the catchment could be improved, based on a study currently underway on the upper River Hull**

Issue 16 - Further investigations on the management of the Chalk aquifer and the spring fed headwaters of the River Hull are underway.

Background

There is extensive utilisation of groundwaters from the Chalk by Yorkshire Water for public water supply especially in the Hull area. There is concern over the potential impacts of the abstractions on spring flows that form the headwaters of the River Hull. Low flows in these upper tributaries reduce the ecological value of some of the most important areas of the River Hull system. The output of boreholes in the Hull area is potentially greater than the aquifer can sustain especially in dry years and is managed by Yorkshire Water using control levels from a number of observation boreholes in the Chalk. A groundwater model is being developed to allow study of the aquifer and the impact that natural climatic variations may have on aquifer recharge and spring flows.

The project is to include a comprehensive environmental appraisal that will encompass all aspects of the River Hull Headwaters management and will culminate with recommended improvement schemes to address the varied issues encountered within the Catchment. An increased understanding of the water regime will lead to better aquifer management practices through licencing policies.

Proposals

- Undertake River Hull Headwaters study to assess environmental impacts of current management of the aquifer & contribution which the prolonged drought has made to low flows experienced at a number of locations.

- Utilise the results of the improved groundwater model to enhance protection of the aquifer from pollution.

Responsibility
Environment Agency

- Review the control rules of the River Hull public water supply boreholes.

Responsibility
Environment Agency
Yorkshire Water Services

Issue 17- The West Beck is heavily used for fish farming.

Background

The West Beck has a number of fish farms, principally producing Rainbow Trout. There are environmental impacts associated with these activities such as abstraction of water, discharge of effluents and escapes of non-indigenous fish into the watercourse.

Proposals

- Utilise the results of the River Hull Headwaters study to investigate flow regimes in the West Beck and their relationship with the impacts of discharges from the fish farms.
- Maintain rigorous monitoring programme to ensure that licences and consents for the fish farm operations are adhered to.
- Review the results of R&D work on the impacts of non-indigenous fish on the environment.

Responsibility
Environment Agency

Issue 18 - The high quality fishery in the upper River Hull requires protection from pollution, low flows and modifications to the channel.

Background

Significant ecological damage has occurred to the delicate environment of the Chalk streams as a result of low flows and unsympathetic channel management. Increased siltation resulting from reduced velocities has led to compaction of gravels, rendering them unsuitable as fish spawning areas. These problems are exacerbated by intermittent pollution. Southburn, Kirkburn and Eastburn becks are particularly severely affected. Local angling interests and fishery managers have reported increased predation by birds, resulting in a reduction in the breeding populations of indigenous fish species such as brown trout and grayling.

Physical obstructions to the passage of fish such as weirs and valves prevent the free movement of fish within the catchment. In some cases there are obstructions which prevent certain species entering the watercourses from the sea and estuary. This has a significant effect on the composition, structure and development of the fish populations. As water quality improves in the watercourses of the catchment, area will remain inaccessible to upstream migrating fish unless some facilities to aid passage are provided.

Proposals

- The River Hull Headwaters study will identify measures to maintain, improve and develop the important fishery of these sections of the river. In addition small scale improvement schemes can be carried out in advance of the findings of the main study where suitable solutions have been identified.

Responsibility
Environment Agency
Landowners
Angling Clubs

- Previous studies have identified the current status of obstructions on the River Hull. This could be extended to cover all watercourses in the LEAP area. Opportunities for mitigation or removal of obstructions could be promoted as and when resources permit.

Responsibility
Environment Agency

G Regulatory practices require to be reviewed regularly

Issue 19 - Reviews are needed of existing and proposed regulatory practices.

Background

The use, storage and disposal of radioactive substances within the LEAP area requires justification. The amount is minimised by regulation under the Radioactive Substances Act 1993.

A European Directive on Integrated Pollution Prevention and Control (IPPC) has been passed recently and will be implemented in UK legislation in the near future. This Directive extends integrated pollution control to a much wider range of activities, including certain agricultural operations such as intensive rearing of animals.

Proposal

- Carry out a review of the authorisations and registrations issued under the Radioactive Substances Act 1993 with particular attention to justification of use, storage and disposal .
- Assess the impact of the EC Directive on Integrated Pollution Prevention and Control (IPPC) within the LEAP area.

Responsibility
Environment Agency

H There is much potential for the Agency to improve waste management in the Hull & East Riding Area

Issue 20 - Supervision and monitoring programmes for the land spreading of waste need to be determined.

Background

Land spreading represents an economical and when properly controlled, environmentally safe way of recovering value from a variety of organic wastes, eg manure, silage effluent certain industrial wastes eg food processing wastes, which may in the past have been dumped at sea or land filled. These wastes may provide valuable nutrients which allow farmers to reduce the amount of inorganic fertilisers required. Potential disadvantages, however include, possible soil contamination and pollution of water including groundwater.

Landspreading of wastes is a significant activity in the LEAP area. It is exempt from waste management licensing and is regarded by the Agency as a method which requires more effective monitoring.

Education measures within the agricultural sector and best practices for the applications of waste to land, should ensure waste is spread in a manner that benefits the land and ensures activities will not put groundwaters at risk.

Proposals

- Consider the best practices for the application of waste to land.

Responsibility
Environment Agency, MAFF

- Ensure waste is not being spread on high vulnerability areas.

Responsibility
Environment Agency, Others

- Reach agreement with the agricultural sector to provide the Agency with regular soil analysis.

Responsibility
Environment Agency

- Establish a systematic waste sampling programme to confirm the suitability of the waste going to land.

Responsibility
Environment Agency

Issue 21 - Standards of operation in scrapyards can be improved.

Background

Hull and Bridlington, in common with many urban areas, have a number of scrapyards and car-breakers. Scrap yards became subject to waste management licencing from 1st April 1994, which required metal recycling to be carried out in an environmentally sound manner.

The Environment Agency recognises that scrap yards contribute to the recovery and recycling of waste materials. Scrap yards can deliver important environmental benefits by increasing the conservation of resources and mitigating the environmental impact of waste.

By their very nature scrapyards handle materials with a pollution potential and employ processes which can harm the environment. A standard of operation must be set and achieved which protects the environment in these circumstances.

Proposals

- Ensure statutory obligations with regard to minimum inspection frequencies are met.
- Carry out impact assessment of scrap yards in the Hull & East Riding LEAP area.
- Increase awareness by education of the carrier registration and duty of care regulations.

Responsibility
Environment Agency

Issue 22 - The area is important for the import and export of waste.

Background

The government has published its policies on the above issue in the document 'United Kingdom Management Plan for Exports and Imports of Waste' which incorporates detailed technical guidance. This plan is largely legally binding and is likely to form part of any future statutory national waste strategy.

The plan states that no exports for disposal will be permitted and UK will not accept waste from developed countries which are able to develop their own facilities. Imports for genuine recovery may continue subject to appropriate controls in the EU Waste Shipments Regulations.

Proposals

- Establish links with terminal operators, UK carriers and other authorities.
- Identify examples where waste is transported under the guise of raw materials or other goods.

Responsibility
Environment Agency
Others

Issue 23- Information is required to highlight waste disposal needs in the area and to identify opportunities to promote the benefits of waste minimisation.

Background

Working towards sustainable waste management will require the commitment of not only the authorities responsible for regulating and controlling waste, but also the diverse groups of waste producers from individuals through to industry. It is vitally important that everyone is clear about what contribution they can make to promoting sustainable waste management.

A central requirement for the future will be the provision of information so that everyone involved in the production and management of waste can play a full part.

Proposal

- The Agency will promote the environmental and functional benefits of adopting waste minimisation practices throughout industry.
- Ensure that waste management is based on the following order of priority; elimination, reduction, re-use, recovery and (as the last option) disposal.
- The Agency will contribute to the debate on sustainable waste management.
- The Agency will seek to encourage the adoption of more sustainable methods of waste management, in line with the governments policy on sustainable development.
    - Adoption/operation of landfills as bioreactors with the aim of achieving accelerated waste stabilisation.
    - Promote the adoption of more sustainable methods of waste management, ie waste to energy plants.

Responsibility
Environment Agency

I	Many parts of the catchment are vulnerable to pollution of surface and groundwater

Issue 24 - The Chalk aquifer is especially at risk from agricultural activities.

Background

The Chalk aquifer is vulnerable to pollution from agricultural activities such as sheep dip disposal, agrochemical sprays, slurry applications and the storage of chemicals. Within the Hull and Humber catchment there are approximately 1900 farms. Farming activities can seriously impact on water quality if good agricultural practice is not carried out. In the Holderness area intensive pig rearing takes place with large volumes of slurry being produced. On the East Yorkshire Wolds sheep dipping practices are common and cereal is widespread throughout the catchment with pesticides, herbicide and fungicide applications made throughout the growing season. Dairy farmers have a responsibility to ensure that all dirty water, slurry and silage effluent is safely disposed of without causing pollution. The farming community as a whole has therefore a responsibility in this area to ensure the protection of the water environment and only with good farming practices and good liaison with MAFF and the Agency can this be achieved.

The aquifer is especially vulnerable to nitrate leached from agricultural fertilizers. Nitrate levels are rising on most of the public water supply boreholes and a number are exceeding or close to exceeding the standard of the Drinking Water Directive. The River Hull at Hempholme where Yorkshire Water Services abstracts water for Tophill Low treatment works has failed the Directive on Surface Water Quality with regard to Nitrate, primarily due to leaching from agricultural fertilizers and slurries. Nitrate Sensitive Areas (NSAs) have been declared on the catchment at a number of sources where the farmers will be compensated for changing agricultural practice to grow crops that will reduce nitrate leaching. These are sources where there is no alternative water supply. Nitrate Vulnerable Zones (NVZs) have been implemented covering all Nitrate Sensitive Areas and also additional sources that may exceed the Drinking Water Directive on Nitrate by the year 2010. This makes proposals contained into The Code of Agricultural Practice mandatory.

The Groundwater Protection Policy outlines a comprehensive framework for protection of groundwater. Its implementation requires considerable work in: preparing Groundwater Vulnerability Maps, Defining Groundwater Protection Zones for major potable water supplies.

Proposals

- Carry out proactive prevention campaigns on farms and industrial estates in the catchment eg Winestead Drain, Burstwick Drain, Holderness Drain, Keyingham Drain, Ottringham Drain.
- Inspect all British Agricultural Standards Inspection Scheme (BASIS) registered stores in the catchment.
- Establish projects to monitor nitrates in groundwaters eg River Hull, Kilham , Bridlington, Springwells, North Newbold and Cottingham NVZs and NSAs.
- Utilise the results of the improved groundwater model to enhance protection of the aquifer from pollution.

Responsibility
Environment Agency

Issue 25 - Timescales for improvements in sewage treatment and the premature operation of Combined Sewer Overflows (CSO) will affect the water quality and the designated bathing beaches on the coast and risk contravention of the Urban Waste Water Treatment Directive (UWWTD).

Background

Sewage treatment works have received inadequate investment for many decades and as a result many are overloaded and produce poor quality effluents. Despite major investment in recent years there is still a backlog of sewage treatment works which require improvement. Treatment facilities are being constructed at Bridlington and Hornsea to achieve compliance with EC Directives. At Bridlington the scheme includes secondary and tertiary treatment by ultra violet disinfection which is above and beyond the requirements of the UWWTD.

Some CSOs, originally designed to operate in periods of heavy rainfall operate in low flow conditions. The rivers to which the CSOs discharge can become grossly polluted as a result, with unpleasant aesthetic effects such as faecal matter being deposited in addition to the impact on aquatic life. Where CSOs outfall onto bathing water beaches there is a serious risk to the public in terms of viral and bacteriological contamination and contravention of the EC Bathing Water Directives.

Remedial action has been taken in the form of significant capital expenditure on coastal improvement schemes. Some schemes have been completed and some others are yet to commence. Important schemes to both STWs and CSOs will result in improvements in water quality and a reduction in the frequency and volume of storm spills to river to reduce aesthetic problems.

Proposals

- Liaise with YWS on improvement schemes to STWs in the Catchment.
- Review all discharge consents on rural STWs and determine a programme of investment.

Responsibility
Environment Agency
Yorkshire Water Services

- Collect evidence on unsatisfactory CSOs and determine priorities for improvement.

Responsibility
Environment Agency
Yorkshire Water Services
Local Authorities

- Produce study on rural sewerage and septic tank disposal in the Holderness area.

Responsibility
Environment Agency
Local Consultants

J Strategies for recreation in the area are, as yet, poorly developed

Issue 26 - There are opportunities to provide improved facilities at many locations, including for the disabled.

Background

There is currently much interest in the sustainable use of rivers and other water environments for leisure pursuits. Improving water quality and work to restore the visual amenity of the water environment will bring with it an increase in interest in recreational use. There is much evidence that there is pent up demand for facilities to be made available on waters not previously considered suitable. Sensitivity in the promotion of new developments as well as in the management of existing facilities is vital. There is a risk that opportunities may not be realised in the best manner or there could be conflicts between different types of use if they are not planned and co-ordinated at an early stage. Local authorities in the catchment have taken a lead role in this planning work. Further benefits will be realised by combining efforts.

Proposals

- Work in partnership with local authorities.

Responsibility
Environment Agency
Local Authorities

- Survey all Agency owned and managed land within the Hull & East Riding LEAP area in order to assess the potential the recreational potential prior to drawing up management plans.

- Collaborate with Brandesburton Pits Project to improve disabled access at Fosse Ponds.

Responsibility
Environment Agency

Issue 27 - There are unresolved issues relating to navigation in the area.

Background

There have in recent years been a number of proposals to restore navigation, or redevelop some waterways in the catchment. At the same time some of the existing facilities associated with navigation may be under utilised.

In some instances the legal status of navigation on an individual waterway, or part of former waterway remains to be determined by those promoting its return to use by pleasure craft. On resolution of the above a strategic approach to navigation in relation to the water environment generally, would enable better use of existing waterways and minimise the potential for conflicts with others. The Market Weighton Canal, Leven Canal, Driffield Canal and the River Hull/West Beck have issues relating to navigation.

There is potential for increased pressure on the ecological resources of the area, conflict between user groups, demands on scarce water resources and increased risks of pollution if this issue is not managed in a sensitive manner.

Proposals

- Conduct routine liaison with navigation and other appropriate interests and investigate means of reducing conflict between different users.
- Formulate and apply procedures for use of Weighton Lock by vessels from the Estuary.
- Review existing code of conduct for shared recreational use of the length of the Market Weighton Canal which remains navigable.

Responsibility
Environment Agency

K There are significant opportunities for the Agency to be involved in improving the integrated management of the marine environment

Issue 28 - The Agency will need to develop it's role in coastal issues in liaison with the relevant agencies and bodies.

Background

The marine environment has come under increasing pressure from a variety of sources including tourism, recreational use and some commercial activities. Resolving competing demands, regulating and managing the use of the marine environment is the responsibility of a number of agencies.

The DoE has issued a Planning Policy Guidance Note (PPG20) in 1992 dealing with the approach to coastal planning. The guidance sets out the importance of the coast as a national resource and the need for development to be sustainable. PPG20 acknowledges that coastal planning is a strategic issue, requiring partnership between organisations.

English Nature have issued their own guidance on coastal management under the umbrella of the 'Campaign for a Living Coast'. Part of the campaign involves the identification and designation of a number of Sensitive Marine Areas. The Habitats Directive will also have a major impact on the management and protection of the most valuable marine areas. Flamborough Head has been proposed as a Special Area of Conservation under the Directive.

Shoreline Management Plans are strategic documents focussing on flood and coastal defences in a 'coastal cell' and will assist in the development of forward looking plans which take account of natural processes, planning pressures, current and future land use, defence needs and environmental considerations. MAFF encourages the setting up and operation of coastal defence groups. The coastal cell which contains the coastline of this LEAP area extends from Flamborough to Gibraltar point in Lincolnshire. The Shoreline Management Plan is being produced by the Humber Estuary Coastal Authorities Group (HECAG), for the area from Flamborough Head to Spurn Point and into the Humber Estuary. The southern section is the responsibility of an adjoining coastal group.

Proposals

- Promote continued liaison with all agencies involved in management of the coastal area.

Responsibility
Environment Agency
Others (North East Sea Fisheries Committee, etc)

- Continue to promote joint initiatives with the two Heritage Coast projects to improve public enjoyment of the areas.

Responsibility
Environment Agency
Heritage Coast Projects
Local Authorities

- Support the combined development of the Flamborough Sensitive Marine Area Project.

Responsibility
Sensitive Marine Area Steering

- Collaborate in the production of the Shoreline Management Plan for the area covered by the Humbler Estuary Coastal Authorities Group (HECAG).

Responsibility
HECAG

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PART 2

Part 2 seeks to identify the current uses, activities and pressures on the environment in the Hull and East Riding Area, and examines the current situation with regard to environmental quality.

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5.0 USES, ACTIVITIES AND PRESSURE

5.1 ECONOMIC

5.1.1 DEVELOPMENT

Background

Land use is the single most important influence on the environment. Control of land use change is achieved through implementation of the Town and Country Planning Acts and a range of Government Planning Guidance which are largely the responsibility of Local Authorities.

Town and Country Planning undertaken by local planning authorities (LPAS) is the usual means for determining change in land use. Through development plans and the implementation of development control, local councils can decide on the location of new development, the redevelopment of existing areas and changes of use of land or buildings. These decisions can have a profound effect on the environment and it is important that the Agency is able to influence this process.

Regional Planning Guidance for Yorkshire & Humberside (RPG12) was issued by DoE in March 1996 after consultation with the LPAs and the former National Rivers Authority.

The Agency's participation in the Town and Country Planning process is essentially at two levels:

(i) As a consultee on certain categories of planning applications, especially when development proposals contain potentially adverse implications for the environment and the Agency would wish to object or seek mitigation and enhancement to counter these impacts.

(ii) As a consultee on Development Plans which are produced by planning authorities to set out land use objectives and provide a framework for allocating land for development.

The Agency has published 'Guidance Notes for Local Planning Authorities on Methods of Protecting the Water Environment through Development Plans'. This provides a guide to LPAs on what policies should be included and why they are important. Additional guidance to reflect all Agency remit will be prepared in the future.

LEAPs provide a vision for the future and set out the problems and issues within a specific locality and therefore provide an important source of information to planning authorities.

Table 2 shows the current position of local authority plans in the Hull & East Riding LEAP area.

Table 2: Current Status of Local Authority Development Plans

Local Authority	Development Plan	Status Estimated Adoption Date
Kingston Upon Hull City Council	Area Wide Local Plan	December 1997
East Riding of Yorkshire Council formerly :- Beverly Borough Council East Yorkshire Borough Council Boothferry Borough Council Holderness Borough Council Humberside County Council	Area Wide Local Plan	January 1998
Selby District Council (Dales Area)	Area Wide Local Plan	October 1998
North Yorkshire Moors National Park (Dales Area)	Area Wide Local Plan	June 1999

Local Perspective

The Agency has a full and active dialogue with all the LPAs within the Hull & East Riding LEAP area, at all levels of development control, from making comments on individual applications to providing policy inputs to structure and local plans.

The Agency participates in the planning process to protect the public and the environment from any adverse effects associated with development. 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

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.

Within the LEAP area 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.

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.

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_2 (carbon dioxide) emissions, most of which comes from road transport. The government predicts an increase in road traffic of 142% by the year 2025.

National planning policy guidance (PPG12 and PPG13 "Transport") recognises the need to encourage the development of acceptable alternatives to the private car.

Local Perspective

In the East Riding as elsewhere in the UK, the number of households owning at least one car is rising, largely the result of the rural nature of the area where the population is dispersed in small communities often some distance from essential services such as shops, schools, hospitals and employment opportunities.

Emissions from vehicles does not fall within the responsibility of the Agency, however road construction can increase areas of impermeable surfaces and may increase flood and pollution risks.

Within the LEAP area, structure and local plans can play a part in reducing the effects of traffic. The Rural Strategy, the 97/98 Transport Policies and Programme and a Traffic Reduction Plan currently being prepared by the East Riding of Yorkshire Council, will place greater emphasis on achieving a sustainable transport network in the area.

5.1.3 PROCESS INDUSTRIES

Background

The Agency regulates the potentially most polluting industrial processes by Process Industries' Regulation. The processes regulated include Fuel Production and Combustion, Chemicals, Timber and Coatings. There are currently 36 processes authorised in the LEAP area.

Local Perspective

Many of the processes in the area were existing at the time of implementation of the Environmental Protection Act 1990(EPA90) and were authorised on a timetable with improvement conditions imposed to upgrade these processes to achieve release standards comparable with new plant. In the LEAP area considerable progress has been made to establish requirements and a number of significant projects sanctioned. These will have considerable impact on environmental improvement with respect to releases of sulphur dioxide and volatile organic compounds.

There are currently no power stations within the Hull & East Riding area of sufficient size to require regulation by the Agency. However, close to the eastern boundary of the plan area are Drax and Eggborough power stations. The environmental impact on air quality of these power stations is assessed in the relevant LEAP. Any potential effects on air quality in the Hull and East Riding area will have to be considered by the local authorities in conjunction with the Agency in developing their Air Quality Management Plans.

SCARBOROUGH
RYEDALE
BRIDLINGTON
DRIFFIELD
HORNSEA
EAST RIDING OF YORKSHIRE
MARKET WEIGHTON
BEVERLEY
HULL
CITY OF KINGSTON UPON HULL
GOOLE
A64(T)
A1079
A165
A166
A163
A1034
A1035
A1174
A1079(T)
A164
A63
M62
A614
A161
A1105
A15
A1077
A1033
A160
1
2
3
4
5
6
7
8
9
10
11
12
13
TA10
TA20
0 2 4 6 8 10km
Scale

HULL & EAST RIDING IPC SITES

KEY

- CATCHMENT BOUNDARY
- ADMINISTRATIVE BOUNDARY
- FUEL PRODUCTION OR COMBUSTION INCLUDING POWER GENERATION
- CHEMICAL INDUSTRY
- OTHER INDUSTRIES

1. British Aerospace
2. Hodgson Beverley
3. Dunstons
4. Smith and Nephew
8. Croda Universal
6. Seatons
7. Hodgson Hull
8. Hollidays Pigments
9. Perenco
10. Mobile Marine
11. Hunter Timber
12. BP Saltend
13. Miracle Garden Care

Figure 6

5.1.4 STORAGE/USE OF RADIOACTIVE MATERIALS

Background

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

The Radioactive Substances Act 1993 (RSA93) provides for controls to be exercised over the use and keeping of radioactive materials and the accumulation and disposal of radioactive wastes. The Agency is responsible for 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

There are no nuclear sites in the area.

There are 5 authorisations to accumulate and dispose of radioactive waste covering the University of Hull, Royal Hull Hospitals NHS Trust, East Yorkshire Hospitals NHS Trust and Humber Authorities Scientific Services.

There are 58 extant registrations covering the keeping and use of radionuclides in such activities as weld radiography, crop flow measurement and process control.

5.1.5 LAND USE, AGRICULTURE AND FORESTRY

Background

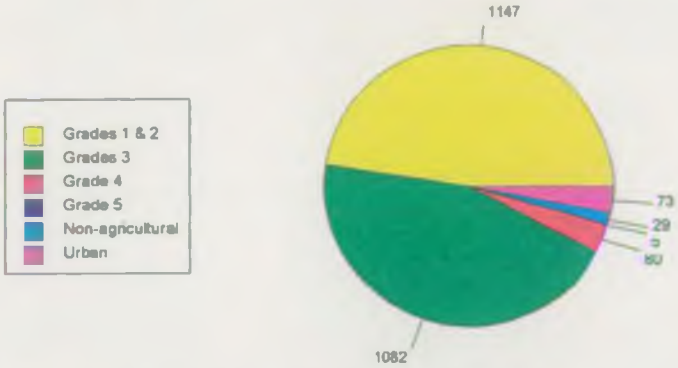
Land use and land cover can have a considerable impact on the physical and chemical condition of surface and ground waters. The code of 'Good Agricultural Practice for the Protection of Water and the Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) Regulations 1991' and the 'Forests and Water Guidelines' summarises the best practices for agriculture and forestry in relation to the protection of the water environment.

MAFF uses a system of land classification based upon the extent to which physical characteristics of land impose long term limitations on land use. The grades range from Grade 1 which is excellent land with virtually no limitations on agricultural use to Grade 5 which is very poor quality land with severe limitations.

Local Perspective

The area contains a very high proportion of the higher grades of land as indicated in the chart. East of the Wolds a variety of drift deposits are found, including clayey textured marine alluvium, chalky boulder clay and sandy textured fluvioglacial drift. Better drained soils tend to occur on the sandy drift and some chalky boulder clay.

Agricultural Land Classification (ALC)



Information refers to land covered by East Riding of Yorkshire.

On the highest land on the Wolds, very shallow, stony soils are found, derived from Chalk typically stoney, droughty and subgrade 3b (subject to severe soil wetness and workability limitation). Steep slopes on the Wolds are often Grade 4. Towards Beverley and Driffield where light textured drift covers the chalk, deep well drained soils are found, often Grade 2 with slight droughtiness or wetness limitations. Remaining land west of the Wolds contains soil derived from a mixture of clayey and sandy textured drift. Sandy soils are also common in this area and although usually well drained, are often subject to a moderate or severe droughtiness limitation as well as being susceptible to wind erosion during dry, windy, spring weather.

5.1.6 TOURISM

Background

Tourism forms a key element in the economy of the Hull & East Riding LEAP area making a valuable 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.

Local Perspective

The majority of tourist accommodation at present is found along the traditional coastal resorts, however there is potential inland on the Wolds and around the Southern Holderness due to the attractive countryside, diverse wildlife and heritage coast which attracts visitors to the area.

The existing tourism industry is seasonal in nature and is reliant on traditional coastal towns which are suffering from competition from abroad. Much of the tourism industry relies on caravans for accommodation especially in the Holderness area.

With changes in agricultural markets, farmers are looking at alternative sources of income and alternative accommodation could be encouraged via farm diversification schemes which should take into account the environment eg reuse of redundant buildings, short stay countryside and outdoor sports holidays.

As part of the East Riding of Yorkshire Council Rural Strategy, tourism in the East Riding Area will be promoted as a place to visit all year round, encouraging alternative holiday activities and ensuring new tourism developments respect the environment on which it depends.

5.1.7 FISHERIES AND ANGLING

Background

Fish populations are influenced by water quality, the quantity available and physical habitat and are excellent indicators of the quality of the water environment. Financial benefit to local communities is generated via commercial and recreational fisheries.

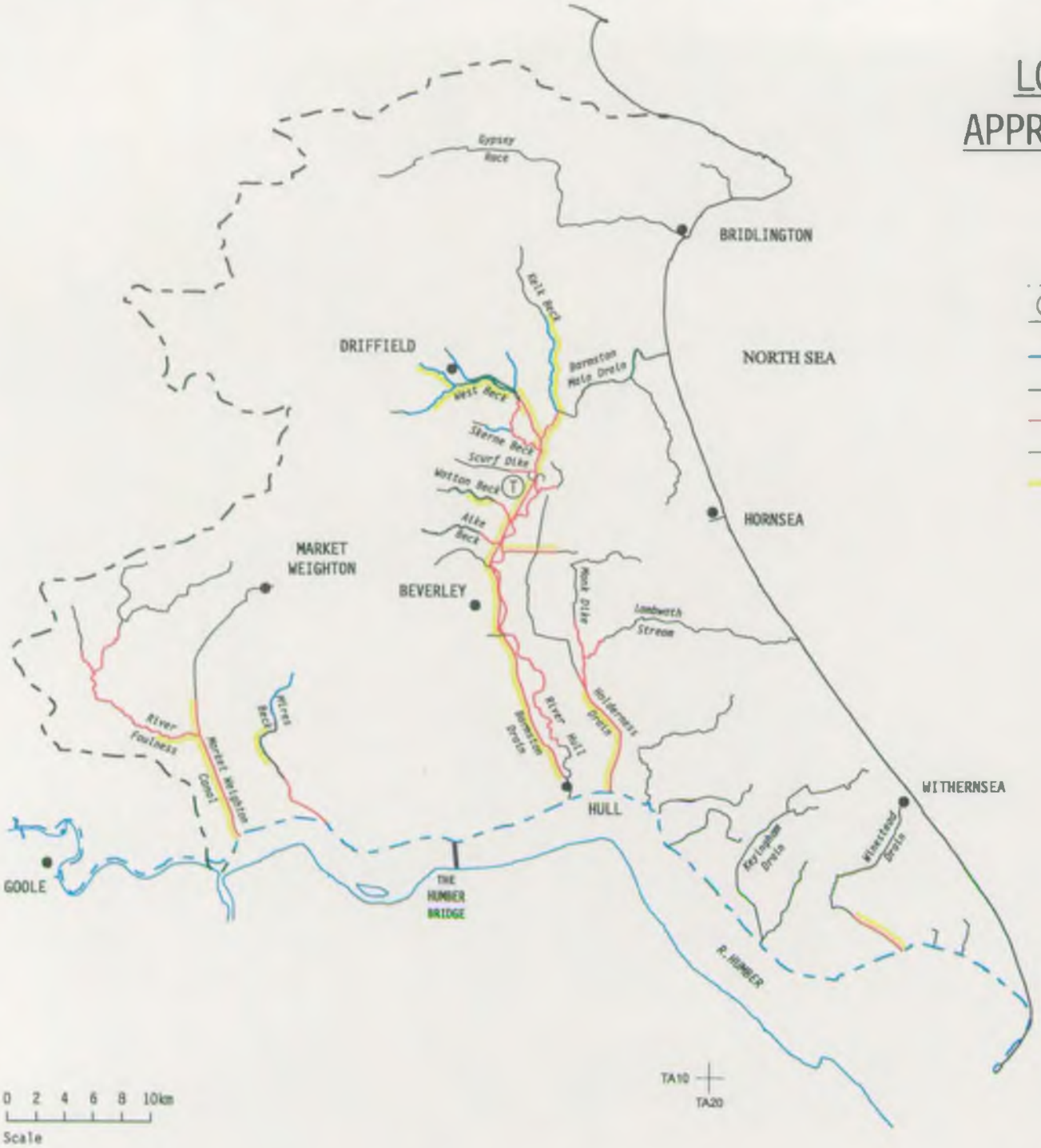
The Agency has a specific duty under the Water Resources Act 1991 and the Salmon and Freshwater Fisheries Act 1975 to maintain, improve and develop fisheries. These are additional to the more general powers for the enhancement and protection of wildlife under the Wildlife and Countryside Act 1981 and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

Local Perspective

The headwaters of the River Hull above Driffield have long been recognised as a high quality brown trout fishery. In the sections above Poundsworth there is a pure brown trout fishery maintained and improved by long established angling associations. Low flows in these sections have threatened this fishery for a number of years and the Agency and its predecessors have carried out a number of practical works to protect fish and other wildlife. Below Poundsworth to Frodingham Beck the mixed trout and grayling stocks are replaced by a range of coarse fish species. In these sections the presence of a number of commercial fish farms has impacted on the natural fishery as a result of abstraction, discharge of effluent and escapes of non-native species.

Angling activities on the River Hull and its tributaries are likely to continue at current levels in the future, indicated on *figure 7*. There are some possibilities for improved

HULL & EAST RIDING
LOCATION OF FISH SPECIES
APPROXIMATE EXTENT OF ANGLING



KEY

- CATCHMENT BOUNDARY
- TIDAL LIMIT
- TROUT (& OCCASIONAL GRAYLING) PRESENT
- TROUT AND COARSE FISH PRESENT
- COARSE FISH ONLY
- FEW OR NO FISH PRESENT
- APPROX. EXTENT OF ANGLING ARRANGEMENTS / ACTIVITY - WHERE KNOWN

Figure 7

facilities on adjacent stillwaters such as ponds and gravel pits. In addition improved water quality in the lower river should permit better angling opportunities.

The coastal waters of the catchment support a number of important commercial white fish and shellfish fisheries. There are also a small number of shore based and inshore commercial netsmen harvesting salmon.

A major priority for the Agency will be in working with riparian owners, farmers and angling groups to maintain, improve and develop the fisheries in the River Hull and throughout the Area.

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 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
- the release of poisonous, harmful or polluting materials into the environment
- waste material proving harmful to health
- the contamination of land on which waste management activities have taken place
- traffic pollution as waste is transported from the point of production to the point of disposal

To promote a more sustainable approach to waste management, in December 1995 the Government published a white paper 'Making Waste Work: A Strategy for Sustainable Waste Management in England and Wales'. To help achieve its objectives the strategy ranks the waste management options into a hierarchy which gives a broad indication of their potential risk to the environment (with the least risk at the top).

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

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

The Role of The Agency

The Agency's principal role in directly protecting the environment from waste is through the regulation of waste treatment, storage and disposal facilities by way of a licensing supervision system. Under the Environmental Protection Act 1990 (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 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.

Local Perspective

The area is not self-sufficient in being able to dispose of the controlled waste produced within its catchment.

Production and disposal of controlled waste

Four landfill sites provide a disposal outlet for the household waste produced in the area. These sites named Humberfield Quarry, Carnaby, Catwick Grange and Gallymoor serve the populations of Hull and Beverley, Bridlington and its surrounding area, Holderness and the rural west of the catchment respectively. The site at Gallymoor is set to replace the site at Breighton in the River Derwent catchment which currently accepts the waste from the Market Weighton area and the rural countryside to the west. Two of the aforementioned sites (Humberfield Quarry and Carnaby), were originally developed as facilities for household waste as part of the waste management strategy of the former Humberside County Council (the waste disposal authority) and five District Councils (waste collection authorities). They are now able to accept general, commercial and

industrial waste of similar character and composition to household waste, (ie. biodegradable and potentially hazardous). When these two sites were developed in the early 1980's they were not engineered containment landfills as is the standard today. However, some retrospective engineering has been employed particularly at the Carnaby facility.

The major private waste collection businesses serving the commercial and industrial sectors tend to pre-treat the waste they collect in transfer stations where a degree of recovery and recycling is instigated with the sorted residue dispatched to landfill at Catwick Grange. Typically, proportions of cardboard, timber, hardcore and soil/fines are removed. A further five landfills provide facilities for non-hazardous industrial and commercial wastes and construction and demolition wastes. In addition, there are currently a further seven minor landfill sites used for the disposal of inert waste material.

Special Waste Landfilling

Facilities within the area for the landfilling of some special wastes are scarce. Facilities exist for the disposal of bonded white asbestos and certain special wastes, that were classified as such for the first time under the 1996 Special Waste Regulations. The operator of one landfill which provided environmentally sound management for the more hazardous fibrous asbestos waste (insulation/lagging), suspended this facility in March 1997 for economic reasons. Those "special" wastes produced by the industrial and commercial sectors that cannot be disposed of locally, are exported from the area entailing transport over greater distances and consequently greater costs. The nearest site for such wastes is Winterton in North Lincolnshire.

Commercial and Industrial Controlled Waste Production

The main manufacturing industries in the area are involved with bulk industrial chemicals, aircraft components, furniture, speciality chemicals, pharmaceutical and medical products and food.. All these industrial sectors produce both the hazardous wastes referred to above and other hazardous wastes which are not suitable for direct landfill. These latter types of special waste (both liquid and solid) must be subjected to either treatment with a subsequent element to landfill or to incineration (high temperature destruction) leaving an ash residue for landfill. There are none of these specialised waste treatment facilities in the area to treat those locally produced wastes which warrant such management, resulting in the export of those wastes for disposal in other areas.

Production and recycling of household waste

Household waste production in the area is presently estimated at 250,000 tonnes per annum. 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 two 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 garden waste and unwanted hazardous household chemicals down to the single, now familiar, 'bottle bank' at car parks, supermarkets and similar locations frequented by the public. Currently,

about 8% of household waste is recycled which represents a high value for such a rural area.

With in the Hull and East Riding area there are ten civic amenity sites exclusively for the householder's use. These sites provide disposal facilities for general wastes such as old furniture and garden waste, they also provide collection points for recyclable and re-useable objects and material such as shoes, clothes, glass and newspapers, plus hazardous household waste arisings such as used oil, solvents and unwanted pesticides.

5.2.2 EFFLUENT DISPOSAL

Background

The disposal of effluents from domestic, agricultural and industrial sources can have a significant impact on the quality of rivers and the coast, especially when treatment is inadequate or dilution is low.

One of the Agency's main tasks is to control the impact of discharged effluent on water quality. This is achieved by the issuing of legal consents to discharge under the Water Resources Act 1991. Under this legislation consents and authorisations impose conditions on the quantity and quality of a discharge in order to protect the environment.

Local Perspective

In general the rivers and tributaries in the River Hull Headwaters are mainly of high water quality, suitable for drinking water and capable of supporting both cyprinid and salmonid fisheries. However, due to the rural nature of some parts of the catchment and wide scale agricultural practices, discharges must be carefully monitored to assess the impact on both surface and groundwaters and the sea.

Intensive pollution prevention campaigns have resulted in a reduction in agricultural pollution incidents, however further proactive prevention work, along with investment in improved treatment and sewerage systems is required to maintain and improve water quality.

Sewage Effluent

Discharges of sewage effluent from outlying villages are cause for concern as partially treated or untreated sewage causes a deterioration in the biological and chemical water quality. Even small discharges of sewage effluent can give rise to water quality problems if there is insufficient dilution in the receiving watercourse, such as Driffield Canal below Driffield STW.

Significant improvements are being made with regard to water quality in the Hull & East Riding LEAP area, especially on the East Yorkshire coastal discharges. The largest discharge of sewage effluent is from the East and West Hull pumping stations which can discharge up to 120,000 cubic metres of domestic, industrial and storm effluent a day.

HULL & EAST RIDING
SOLID WASTE DISPOSAL (1)

KEY

- CATCHMENT BOUNDARY
- RIVER
- ADMINISTRATIVE BOUNDARY
- SCRAPYARDS
- HOUSEHOLD WASTE DISPOSAL SITES

1. Hornsea (Atwick Road)
2. Withernsea (Hull Road)
3. Bridlington (Woldgate)
4. Driffield (Kellythorpe)
5. Humberfield Quarry
6. Preston (Staithes Road)
7. Holme on Spalding Moor
8. Beverley (Weel)
9. Hull (Wilmington)

Figure 8

HULL & EAST RIDING SOLID WASTE DISPOSAL (2)

KEY

- CATCHMENT BOUNDARY
- RIVER
- ADMINISTRATIVE BOUNDARY

LANDFILL SITES

- HOUSEHOLD WASTE
- SOIL, SUB-SOIL, CONCRETE ONLY
- LICENSED BUT NOT TAKING WASTE YET
- OTHER WASTE
- CLOSED FOR WASTE

TRANSFER STATIONS

- NOT ACTIVE
- STRONGLY OWN USE
- OTHER TRANSFER STATIONS

TREATMENT PLANTS

INCINERATORS

Figure 9

Table 3: Number of Discharges Consented in 1996/97.

DISCHARGE	NUMBER
Yorkshire Water Sewage Works	174
Private Sewage Works	484
Industrial Effluent	73
Fish Farms	4

Industrial Effluent

Of the 73 industrial effluent discharges in the area, the most significant is the 'Muntons' Maltings at Sewerby. A major capital investment programme is planned in 1997/98 to protect local bathing beaches. In addition, BP Chemicals have a major discharge into the Humber Estuary. The Agency monitors the effluent plume regularly to ensure compliance with EC Directives relating to environmental quality standards. These, and most of the other discharges are products of the feed and chemical industries. None of them have any significant impact on water quality. (See *figure 10*).

5.2.3 FISH FARMS

Background

High quality rivers have historically been subject to development for fish farm purposes, especially spring fed highland systems like the R Hull. 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 with significant investment by the companies, have reduced the decline in water quality to some extent in recent years.

Local Perspective

There are large fish farms within the area as well as a number of smaller sites (see *figure 10*) 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.

In general, fish farms have contributed to for a major deterioration in water quality or the quality of the fishery within the East Yorkshire area. 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 will be carried out once the River Hull Headwaters project has been completed.

Gypsey Race
BRIDLINGTON
NORTH SEA
DRIFFIELD
Kelk Beck
Burnston Main Drain
West Beck
Skerne Beck
Scurf Dike
Hotton Beck
Atke Beck
HORNSEA
MARKET WEIGHTON
BEVERLEY
Main Dike
Lambwath Stream
Burnston Drain
River Hull
Wilderness Drain
Hires Beck
River Foulness
Market Weighton Canal
HULL
Kelsey Drain
GOOLE
THE HUMBER BRIDGE
R. HUMBER
KEY
CATCHMENT BOUNDARY
RIVER
TIDAL LIMIT
0 2 4 6 8 10km
Scale
TA10
TA20

HULL & EAST RIDING INDUSTRIAL AND SEWAGE DISCHARGES AND FISH FARMS

SEWAGE TREATMENT WORKS

1. HOLME ON SPALDING MOOR
2. MARKET WEIGHTON
3. FRIDAYTHORPE
4. DUGGLEBY
5. HUGGATE
6. ELLERKER
7. WEST LUTTON
8. SLEDMERE
9. WETWANG
10. BROUGH CRUDE
11. MIDDLETON ON THE WOLDS
12. SOUTH DALTON
13. TIBTHORPE
14. DALTON
15. WEAVERTHORPE
16. GARTON ON THE WOLDS
17. NORTH FERRIBY
18. CHERRY BURTON
19. LOCKINGTON
20. FOXHOLES
21. WATTON
22. RAF LECONFIELD
23. SKIDBY
24. LECONFIELD
25. DRIFFIELD
26. BEVERLEY
27. KILHAM
28. NAFFERTON
29. TOPHILL LOW
30. HULL (WEST)
31. BRANSHOLME
32. BURTON FLEMING
33. RUDSTON
34. BURTON AGNES
35. BEEFORD
36. LEVEN
37. BRANDESBURTON
38. LONG RISTON
39. HULL (EAST)
40. CATFOSS
41. SKIRLAUGH
42. LANGTOFT
43. SWINE
44. BESSINGBY
45. SKIPSEA
46. BRIDLINGTON
47. HEDON
48. ATWICK HOUSING ESTATE
49. WITHERNWICK
50. HORNSEA SEA OUTFALL
51. FLAMBOROUGH VILLAGE FINAL
52. HAMBLETON HOUSING ESTATE
53. KEYINGHAM
54. ALDBOROUGH
55. BURTON PIDSEA
56. OTTRINGHAM HOUSING SITES
57. ROOS
58. PATRINGTON
59. WELWICK
60. WITHERNSEA OUTFALL
61. EASINGTON

INDUSTRIAL DISCHARGES

1. DALE FARM FOODS, HOLME-ON-SPALDING-MOOR
2. BRITISH AEROSPACE PLC, BROUGH
3. FISHERS AGRICULTURE LTD, HUTTON CRANSWICK
4. HODGSONS CHEMICALS
5. CRODA UNIVERSAL
6. HOLLIDAY PIGMENTS
7. ANGLIA OILS, HULL
8. BRITISH PETROLEUM, SALTEND
9. BRITISH GAS - HORNSEA STORAGE (Stream Dyke)
10. BRITISH GAS - ATWICK
11. BRITISH GAS - HORNSEA STORAGE
12. BRITISH GAS - DIMLINGTON
13. BRITISH GAS - EASINGTON

FISH FARMS

1. POUNDSWORTH FISH FARM
2. WANSFORD TROUT FARM
3. HUMBERSIDE FISHERIES
4. RAINBOW SPRINGS TROUT FARM
5. WANSFORD NEW TROUT FARM
6. WINHILL FISH FARM

Figure 10

5.3 SURFACE WATER AND GROUNDWATER ABSTRACTION

Background

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

Surface Water Abstraction

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

- whether the requirements of the applicant are reasonable
- the impact on other water users
- the impact on river flows

Ground Water Abstraction

Groundwater in general is of high quality both microbiologically and chemically and usually requires little treatment. However, there are many activities that can cause pollution through underground seepage and once polluted it is extremely difficult and costly to alleviate. The former NRA published the document entitled 'Policy and Practice for the Protection of Groundwater' which is being implemented by the Agency within the Region.

Groundwater protection zones consist of inner, outer and entire catchment zones and are based on the travel time of groundwater to an abstraction source. These zones will be published and most of the controls will be achieved through planning consultations.

Local Perspective

The River Hull and its headwaters, provide an important supply of potable water to the Hull Demand Zone. In addition, abstractions from groundwater supplies in the chalk aquifer provide significant resources to the area.

Surface water abstraction in the Hull Headwaters is high when compared with the lower reaches of the River, as indicated in *figure 11*. In addition to the abstractions for drinking water, there are a number of fish farms who rely on a regular supply of good quality water for salmonid and coarse fish rearing.

During 1996/97, there were 122 surface water abstractions licensed in the Hull and East Riding area. The impact of low flows resulted in 34 of these licenses being subject to hands off flow conditions. This condition enables the Agency to prevent further abstractions from a source when its level drops below its environmental prescribed flow. Compliance of this condition is then monitored by the Agency.

HULL & EAST RIDING LICENSED SURFACE WATER ABSTRACTIONS 1995-6

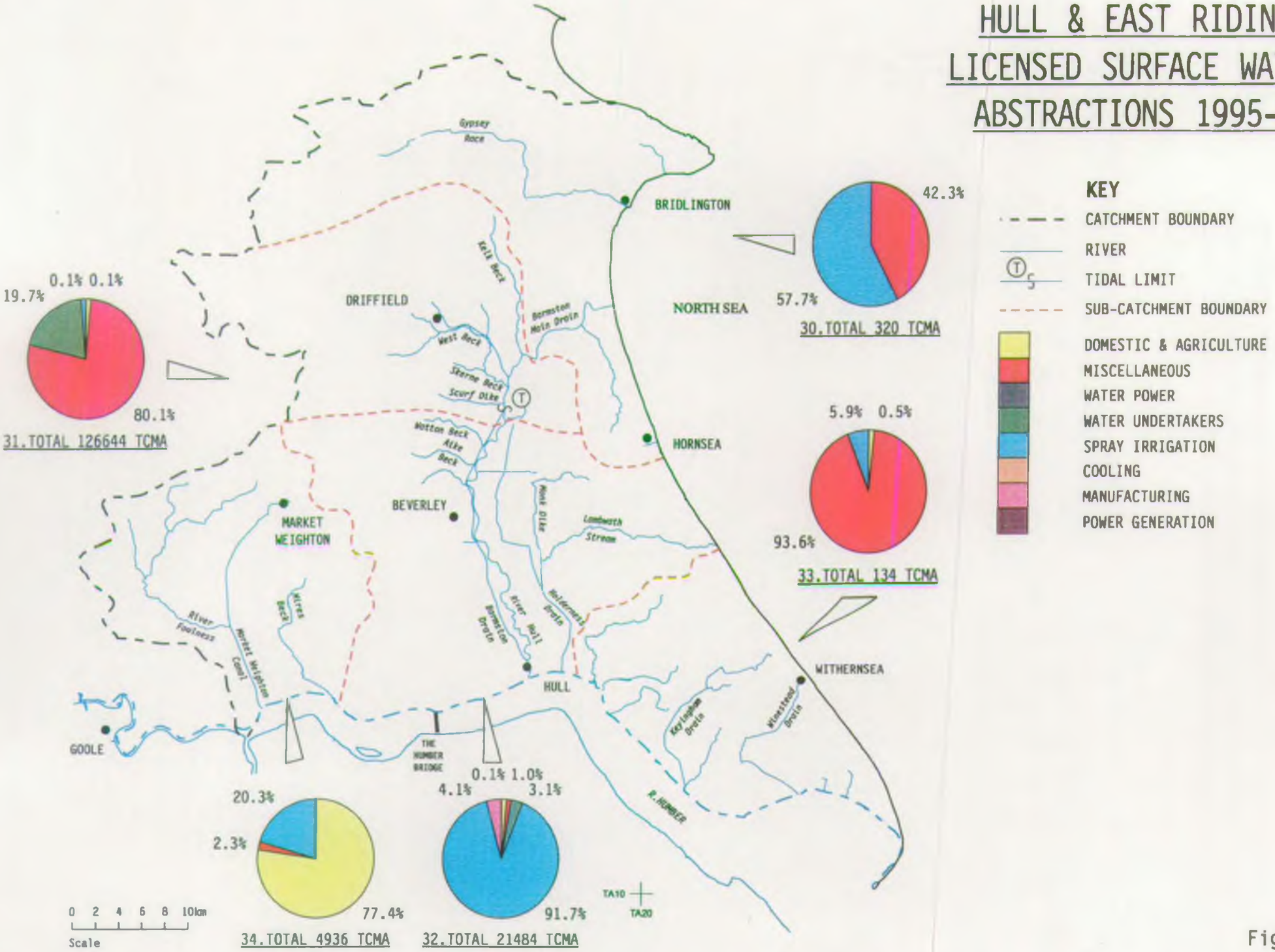


Figure 11

A new Surface Water Abstraction Licensing Policy (SWALP) has been developed and adopted as a policy in the North East Region, and will be used to determine future surface water abstraction licence applications.

Some of the groundwater sources have large diameter wells and extensive adit systems, hundreds of metres in length. The extensive abstraction of groundwater in the Hull area has required formulation of control rules to ensure that the aquifer is not overdrawn during periods of below average recharge, see *figure 12*.

The Chalk aquifer is also vulnerable to hydraulic changes and in particular the following have been identified as Sensitive Groundwater Areas, and are shown on *figure 13*;

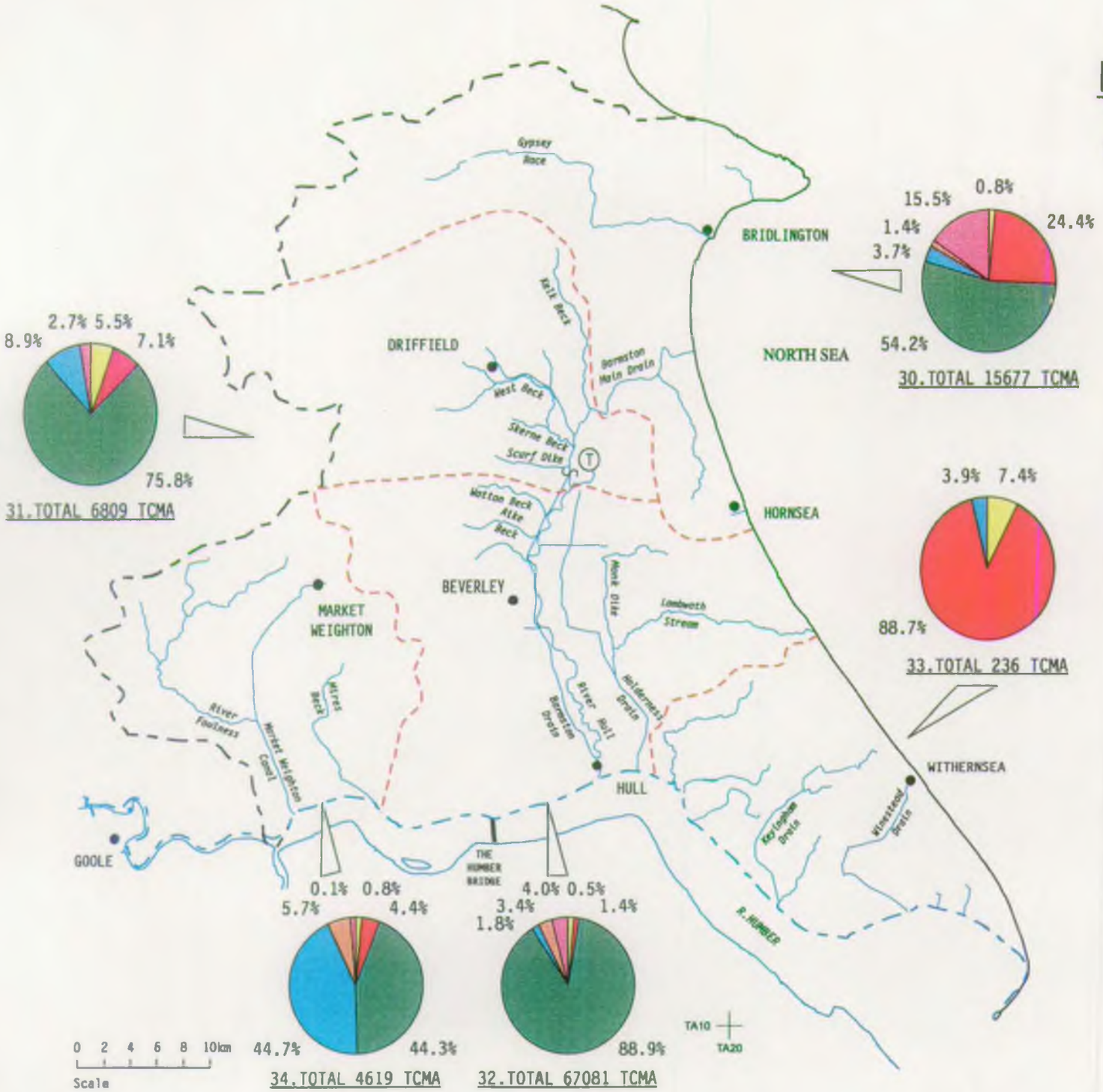
Hull Area - where there is extensive groundwater abstraction by Yorkshire Water. It is controlled by treating the aquifer as a reservoir and calculating the contents based on groundwater levels. Abstraction rates are then adjusted according to control rules to prevent over-depletion of the water resources.

Driffield Area - where the spring zones of Foston Beck and West Beck are important to the flow of the River Hull.

The Agency is unlikely to grant new abstraction licences in either of these sensitive areas.

The study currently underway on the River Hull Headwaters should provide an integrated water management regime which will address these, and other issues.

HULL & EAST RIDING LICENSED GROUNDWATER ABSTRACTIONS 1995-6



30.TOTAL 15677 TCMA

31.TOTAL 6809 TCMA

33.TOTAL 236 TCMA

34.TOTAL 4619 TCMA

32.TOTAL 67081 TCMA

KEY

- CATCHMENT BOUNDARY
- RIVER
- TIDAL LIMIT
- SUB-CATCHMENT BOUNDARY
- DOMESTIC & AGRICULTURE
- MISCELLANEOUS
- WATER POWER
- WATER UNDERTAKERS
- SPRAY IRRIGATION
- COOLING
- MANUFACTURING
- POWER GENERATION

Figure 12

Gypsey Race
BRIDLINGTON
NORTH SEA
DRIFFIELD
Hornsea Mere Drain
West Beck
Hayrick Beck
Tophill Dike
Watton Beck
Aike Beck
HORNSEA
BEVERLEY
West Dike
Leadwith Stream
MARKET WEIGHTON
Kiles Beck
River Foulness
Market Weighton Canal
Beverley Beck
River Hull
Hedon Haven
HULL
Keyingham Drain
THE HUMBER BRIDGE
R. HUMBER
GOOLE
TA10
TA20
0 2 4 6 8 10km
Scale

HULL & EAST RIDING
GROUNDWATER CONSTRAINTS

KEY

- CATCHMENT BOUNDARY
- RIVER
- TIDAL LIMIT
- SENSITIVE GROUNDWATER AREAS
- WESTERN EDGE OF CHALK
- BOUNDARY OF DRIFT OVER CHALK
- >5m OF CLAY IN DRIFT COVER
- URBAN AREA
- SPRINGS
- BH ABSTRACTION 0.5 - 2 MCMA
- BH ABSTRACTION >2 MCMA
- YW BH ABSTRACTION
- YW R.HULL ABSTRACTION

Figure 13

5.4 FLOOD STORAGE AND FLOOD DEFENCE

Background

A major function of the Agency is to provide effective defences for people and property against flooding from rivers and the sea, and to provide adequate arrangements for flood forecasting and warning. A key aim on designated 'main rivers' in this catchment is to maintain existing land drainage margins to provide soil conditions suitable for agriculture.

Flooding can be as a result of:-

i Surface water runoff from land and groundwater draining into rivers exceeding the limited capacity of those rivers;

ii Prolonged rainfall, thunder storms or rapid snowmelt;

iii Tidal surges, 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;

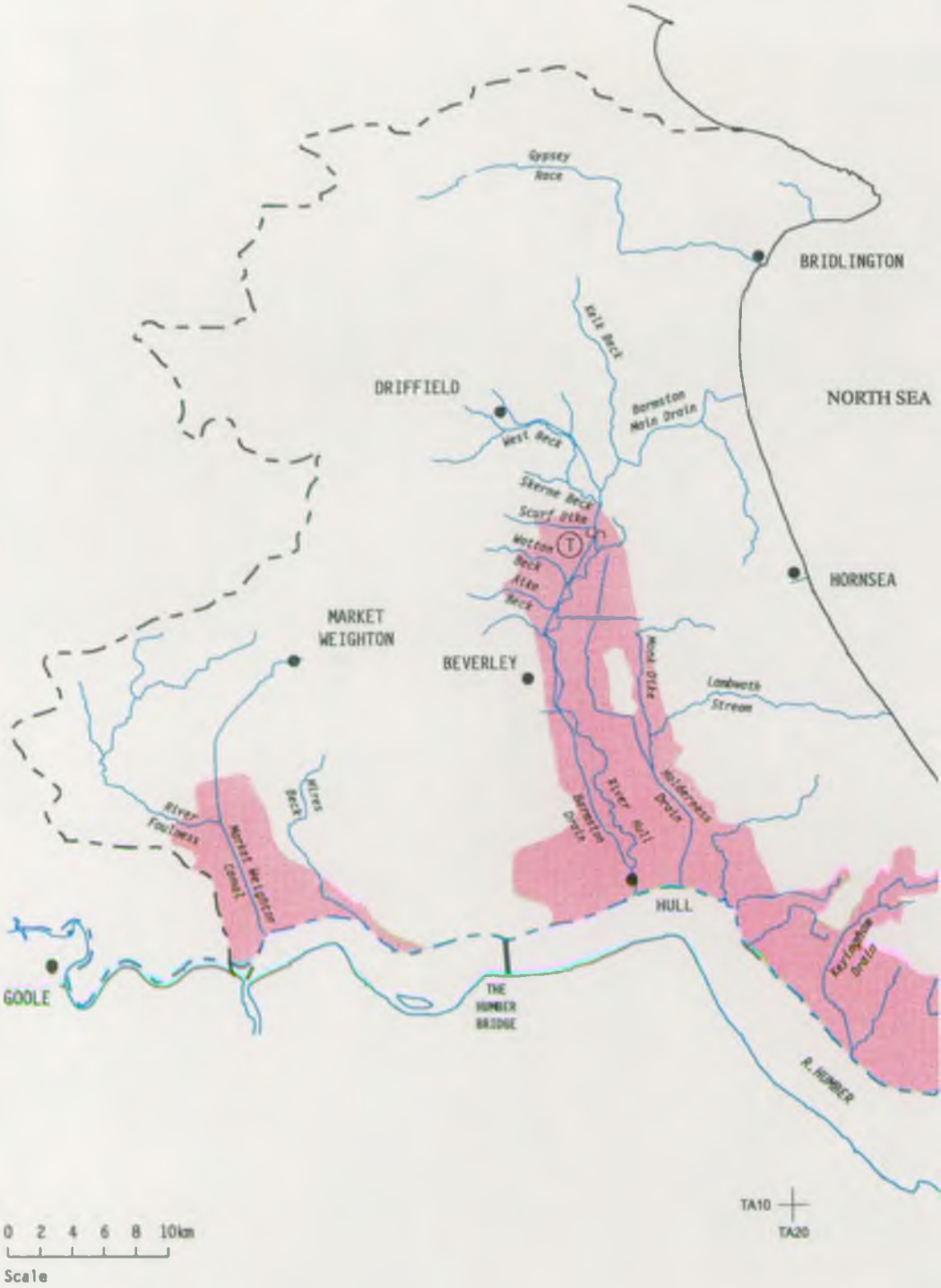
iv a combination of freshwater river flows and tidal surges in estuaries.

The magnitude 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. Watercourses may respond differently due to local variations such as land use.

Floodplains provide extra capacity for the storage and passing downstream of flood water. If significant areas of floodplain have been raised, embanked, or built upon the capacity is reduced and this loss of storage volume can lead to higher river levels elsewhere. The priority for flood alleviation lies in urban areas as undeveloped floodplains should be allowed to play their natural role. Continuity between the river and its floodplain is an essential part of the water cycle.

Local Perspective

Large areas of land in the Hull and East Riding LEAP area lie below high spring tide level in the Humber Estuary. *Figure 14* shows the extent of the LEAP area affected. Many of the watercourses are embanked to provide flood protection to the adjacent land. Internal drainage boards (IDBs) set up by the Ministry of Agriculture, Fisheries and Food (MAFF) have similar powers to the Environment Agency. In this catchment these are the Lower Ouse, Market Weighton, Beverley and North Holderness, Preston, Thorngumbold, Keyingham Level, Ottringham, Winestead Level and Skeffling IDBs. These are illustrated on *figure 15*.


Gypsey Race
BRIDLINGTON
NORTH SEA
Kelk Beck
DRIFFIELD
Barmston Main Drain
West Beck
Skerne Beck
Scurf Dike
Watton Beck
Aike Beck
HORNSEA
MARKET WEIGHTON
BEVERLEY
Moat Dike
Lambwath Stream
Hilves Beck
River Foulness
Market Weighton Canal
Barmston Drain
River Hull
Holderness Drain
HULL
Kelsey Drain
GOOLE
THE HUMBER BRIDGE
R. HUMBER
TA10
TA20
0 2 4 6 8 10km
Scale

HULL & EAST RIDING
AREA BELOW HIGHEST PREDICTED ANNUAL TIDE LEVEL BUT STILL PROTECTED

KEY

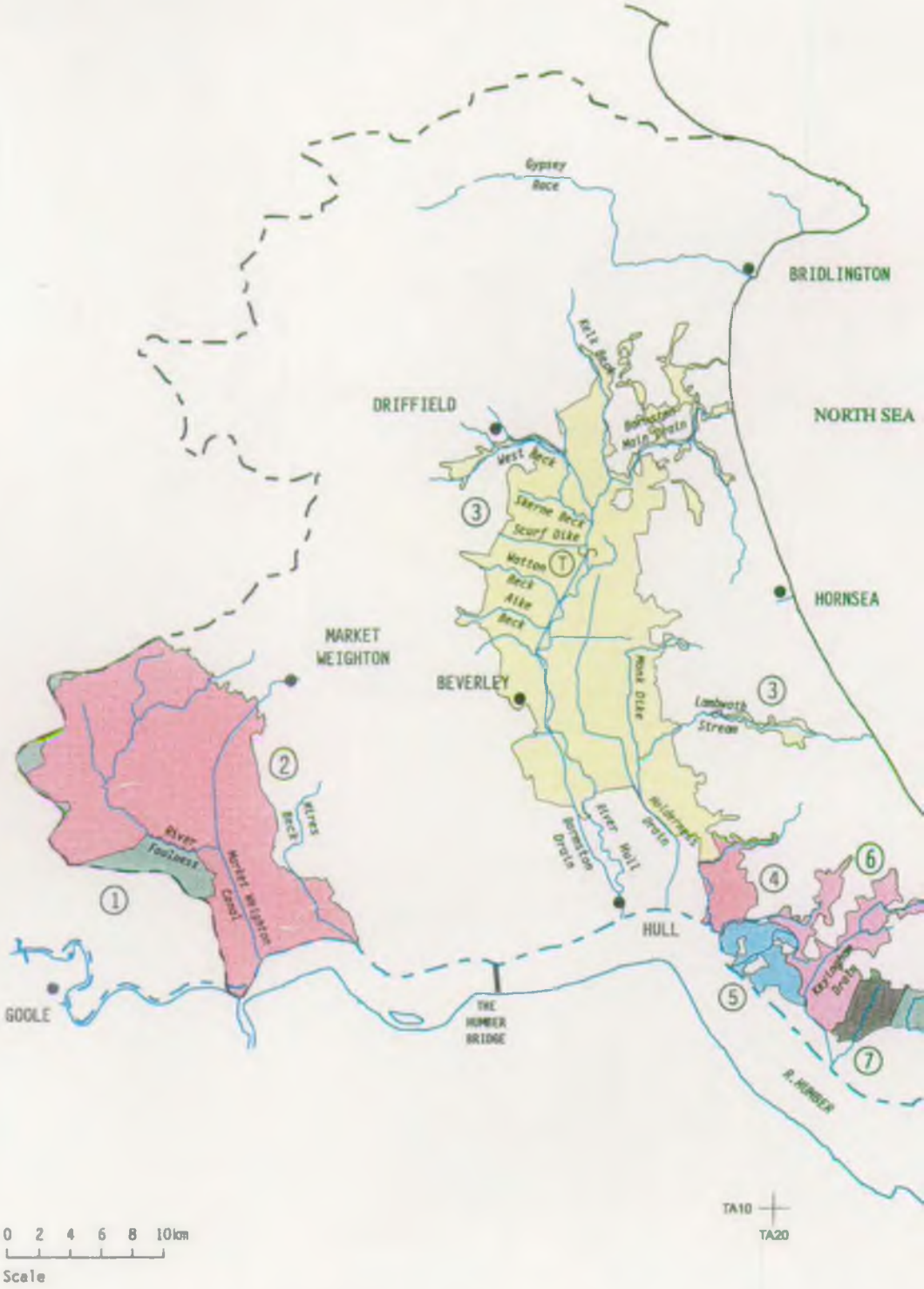
- - — - CATCHMENT BOUNDARY

——— RIVER

Ⓣ TIDAL LIMIT

AREA AT RISK OF TIDAL FLOODING

Figure 14


Gypsey Race
BRIDLINGTON
NORTH SEA
DRIFFIELD
Kelk Beck
Barmston Main Drain
West Beck
Skerne Beck
Scurf Dike
Watton Beck
Alke Beck
HORNSEA
MARKET WEIGHTON
BEVERLEY
Monk Dike
Lambwath Stream
Wilderwath Drain
River Hull
Barmston Drain
Weres Beck
River Foulness
Market Weighton Canal
HULL
GOOLE
THE HUMBER BRIDGE
Keyingham Drain
R. HUMBER
1
2
3
4
5
6
7
TA10
TA20
0 2 4 6 8 10km
Scale

HULL & EAST RIDING
INTERNAL DRAINAGE DISTRICTS

KEY

CATCHMENT BOUNDARY

RIVER

TIDAL LIMIT

1. LOWER OUSE
2. MARKET WEIGHTON
3. BEVERLEY & NORTH HOLDERNESS
4. PRESTON
5. THORNGUMBALD
6. KEYINGHAM LEVEL
7. OTTRINGHAM
8. WINESTEAD LEVEL
9. SKEFFLING

Figure 15

Much of the area is very low lying and flat. In addition, tidal effects restrict gravity flows into the Humber to approximately 12 hours in any 24hr period. In order to provide adequate drainage to certain areas, runoff from the land is pumped at a number of locations. Nine pumping stations are shown on *figure 16*.

Regulation

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'). 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 have similar powers for flood defence on ordinary watercourses. Local authorities also deal with protection of the coast from erosion by the sea. The appropriate legislation relating to ordinary watercourses is to be found in The Land Drainage Act 1991.

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.

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

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 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 Hull & East Riding area a total of eight watercourses have been identified for investigation under Section 105. Lengths of Burstwick Drain, Skeckling Drain, Westland Drain, Preston New Drain and Paternoster Bank Drain are to be completed by the end of March 1998.

Water Level Management Plans (WLMP)

Recent guidance has been issued by the government on the preparation of WLMPs 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.

HULL & EAST RIDING
LAND DRAINAGE PUMPING STATIONS

KEY

- CATCHMENT BOUNDARY
- RIVER
- TIDAL LIMIT

PUMPING STATIONS

1. GREAT CULVERT
2. TICKTON
3. HEMPHOLME
4. WILFHOLME
5. WATERSIDE - BEVERLEY
6. EAST HULL
7. WINESTEAD BOOSTER
8. WINESTEAD OUTFALL
9. SKEFFLING

Figure 16

Three SSSI's in the Hull & East Riding LEAP area have been identified as requiring WLMPs in order to provide a means by which the water level requirements for a range of activities in a particular area, including agriculture, flood defence and conservation can be balanced and integrated. For those three sites, Pulfin Bog on the River Hull, The River Hull Headwaters and Boynton Willow Garth on Gypsey Race, an Interim Management Statement has been produced, the precursor of the full WLMPs which are due at the end of 1998.

Operations and Maintenance

All maintenance works are currently being reviewed using the Flood Defence Maintenance System (FDMS), a computer system. This assesses the cost and benefits of all maintenance works to an nationally agreed method (FDMM).

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.

In recent years, improvement works have been concentrated on tidal lengths of the River Hull where some £20 million has been spent over the last 25 years completing a 10 phase comprehensive scheme. Work on this major scheme was completed towards the latter end of 1996.

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 undertaken 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 in timing and frequency of bank mowing; greater use of natural materials for erosion protection and use of waste materials for conservation projects.

Flood Warning and Emergency Response

Flood Warning Responsibilities

The Region uses a network of telemetry stations providing data on river levels and rainfall which alert staff when risk conditions occur. Warning and operational procedures are then 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, reflect the type of area affected, for example purely agricultural through to dense urban, whether the flooding is fluvial or tidal and to a certain extent 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.

As part of the National Project which aims to improve the awareness of flood warnings to the public to 80% by the year 2001, the Environment Agency has taken the lead role (from 1 September 1996) in making sure that flood warnings get through to the people at risk. All known risk areas which receive a warning from the Agency are recorded in one of the 21 Flood Warning Dissemination Plans which cover the North East Region. These are based on Local Authority boundaries and contain the specific dissemination arrangements for issuing alerts and warnings and contain maps of all the flood risk areas which receive a warning from the Agency. They also include a full listing of property addresses that have been offered a warning and a list of those properties which have agreed to receive one. The dissemination plans have been agreed in consultation with the Local Authorities and emergency services, and those covering this LEAP areas are as follows and can be viewed at the Agency Office:

Kingston Upon Hull City Council Dissemination Plan
East Riding of Yorkshire Council Dissemination Plan

The Agency warns the public and others are risk of flooding using a two tier approach. The first is to alert the public to our flood forecast and to give them details of how they can obtain further detailed information. Within this area the Agency uses an Automatic Voice Messaging (AVM) telephone system as the main means of issuing alerts. The second tier is to provide detailed warning information to the public via the 'Floodcall' dial and listen telephone service (Tel: 0645 88 11 88), local radio broadcasts and ITV's Teletext page 105.

In the event of the possible overtopping or breaching of flood defences, public in the area at risk would be alerted by the use of loud hailer public address equipment which can be mounted on the roofs of Agency vehicles. This arrangement is also available as a back up to the AVM.

Warnings are also faxed to the emergency services, local authorities railtrack and other utilities, primarily to enable them to assess the potential impact of flooding on their own activities and to provide a suitably timed trigger for the implementation of their own operational response plans.

Emergency Response

At times of high water levels, the Agency operates flood defence structures, removes blockages and carries out any emergency repairs needed. During severe fluvial flooding events on the River Hull, the Hull Tidal Surge Barrier is operated to help reduce flooding in the upper reaches of the river.

Within the limits of Agency resources assistance may be given to the emergency services to alleviate actual flooding problems by sandbagging or small scale pumping operations.

The Local Authorities 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. They are also responsible for public highways and would deal with any flooding problems associated with road drainage. 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 Local Authorities as their agents.

5.5 RECREATION AND AMENITY

Background

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

Angling continues to be one of Britain's most popular recreational sports with fishing rights in non-tidal waters belonging to riparian owners who may lease the rights to angling clubs or syndicates. In tidal waters, fishing rights are normally vested in the Crown who allow unrestricted angling, although access to the water may be controlled by the riparian owner.

Under the Salmon and Freshwater Fisheries Act 1975 anyone aged 12 years or over who fishes for salmon, trout, freshwater fish or eels in England and Wales must have a valid Agency rod licence, with this system being enforced by Agency bailiffs. More than 60,000 licences are sold each year in Ridings Area.

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

Local Perspective

Of the land based recreational pursuits along the River Hull corridor, walking is considered to be the most popular, although there is significant interest in birdwatching too. The Wold Way is probably the best established long distance path although the route follows the watershed rather than the river. The Holderness Way and parts of the East Riding Heritage Way are more closely associated with the River Hull. The Trans Pennine Trail skirts the southern part of the LEAP area which overall is quite well served by a variety of promoted routes, see *figure 17*.

Birdwatching interest centres on the large bodies of open water at Tophill Low and the excellent amenity and viewing facilities established by wetlands adjacent to the River Hull.

The topography of Flamborough and Spurn is attractive to visitors in general and birdwatchers in particular observing the passage of migrant species. Both are designated Heritage Coasts.

HULL & EAST RIDING LONG DISTANCE FOOTPATHS/ THEME ROUTES

KEY

- CATCHMENT BOUNDARY
- RIVER
- TIDAL LIMIT
- WOLDS WAY
- TRANS PENNINE TRAIL
- MINSTER WAY
- HOLDERNESS WAY
- EAST RIDING HERITAGE WAY
  Comprising: BEVERLEY 20
  HUTTON HIKE
  RUDSTON ROAM
  HEADLAND WAY
- RAIL TRAIL ROUTES

Figure 17

5.5.1 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 it is the Navigation Authority, to improve navigation together with the duty to maintain and protect it for public use. The Agency is not a Navigation Authority in this LEAP area.

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.

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

Local Perspective

The Hull & East Riding LEAP area offers opportunities for holiday makers, day tourists and casual visitors, inland and at the coast.

Although Bridlington is the major holiday making resort along this part of the coast, Skipsea, Withernsea and Hornsea attract modest numbers of visitors. Popular sea-based recreation includes beach and boat fishing, windsurfing, jet and water skiing, canoeing, some off shore sailing, power boating and scuba diving, as detailed on *figure 18*.

The Agency has been a consultee on the Recreation Strategy being promoted by East Riding of Yorkshire Council and will work closely with the local authority and user groups to ensure the best use is made of the valuable resources of the area.

In addition to its importance for angling the River Hull is of significant interest to users of pleasure craft, small motor cruisers mainly, dinghy sailors at Brigham and canoeists. Concentrations of vessels are moored up river at Hull Bridge near Beverley whilst the new marina at Hull offers comprehensive facilities for larger often sea-going craft.

Beverley Beck, Leven Canal and the Driffield Canal formerly extended navigation from the main course of the river to trading communities adjacent. There are currently initiatives being promoted to restore navigation to some of these waterways. Following repairs to the Market Weighton Lock operated by the Agency, access for boats to the canal is now possible. Navigation will however remain limited as the waterway is severed by low road crossings.

SEA-BASED ACTIVITIES IN COASTAL MARGIN
SUB AQUA DIVING
WATER/JET SKIING Principal zone
HERITAGE COAST PROJECTS
FLAMBOROUGH NORTH
FLAMBOROUGH SOUTH
OFFSHORE GENERALLY
SEA FISHING - SEA BOAT/BEACHCASTING
CANOEING - SEA/SURF/TOURING
SAILING AND POWER BOATING
INCLUDES RACING/ESTUARY
NORTH SEA
BRIDLINGTON
DRIFFIELD
HORNSEA
MARKET WEIGHTON
BEVERLEY
HULL
GOOLE
THE HUMBER BRIDGE
R. HUMBER
Gypsey Race
Kelk Beck
West Beck
Skerne Beck
Scurf Dike
Watton Beck
Aike Beck
Barmston Main Drain
Hull Dike
Lambwath Stream
Hollernness Drain
River Hull
Barmston Drain
Wires Beck
River Foulness
Market Weighton Canal
Keyingham Drain
TA10
TA20
0 2 4 6 8 10km
Scale

HULL & EAST RIDING
PRINCIPAL SITES OF AMENITY, RECREATION OR HERITAGE INTEREST

KEY

1	SPURN PENINSULA	Birdwatching YWT site, Beach Fishing
2	EASINGTON LAGOONS	Birdwatching, Little Tern Reserve
3	HORNSEA MERE	Sailing, fishing, birdwatching
4	SKIPSEA CASTLE	Motte and Bailey remains
5	DANES DYKE	Defensive earthworks
6	BEMPTON CLIFFS	Sea Bird Reserve, birdwatching
7	RUDSTON CHURCH	Prehistoric monolith
8	DUGGLEBY HOWE	Prehistoric burial ground
9	WILLY HOWE	Prehistoric burial ground
10	DRIFFIELD CANAL	Dinghy Sailing - Brigham
11	BRANDESBURTON PITS	Jet/Water Skiing, windsurfing
12	TOPHILL LOW	Birdwatching - YWPLC Site
13	RIVER HULL, BEVERLEY	Boating, canoeing
14	HULL, SPRINGHEAD	Water Industry Museum
15	HULL DOCKS	Hull Marina, boat services
16	HUMBER BRIDGE	Humber Bridge Country Park
17	WELTON WATER	Dinghy Sailing, water skiing
18	BROOMFLEET/ESTUARY	Weighton Lock scheduled structure
19	MARKET WEIGHTON CANAL	Match fishing, canoeing, boating
20	BLACKTOFT, FAXFLEET	Estuary refuge - birdwatching

DESIGNATED BATHING BEACHES

1. FLAMBOROUGH NORTH
2. FLAMBOROUGH SOUTH
3. BRIDLINGTON NORTH
4. BRIDLINGTON SOUTH
5. WILSTHORPE
6. FRAISTHORPE
7. EARLS DYKE
8. BARMSTON
9. SKIPSEA
10. HORNSEA
11. TUNSTALL
12. WITHERNSEA

- - — - CATCHMENT BOUNDARY

——— RIVER

——— TIDAL LIMIT

Figure 18

5.6 CONSERVATION

5.6.1 FLORA AND FAUNA

Background

The Agency has a general duty to promote the conservation of flora and fauna which are dependent on an aquatic environment, further the conservation and enhancement of natural beauty and the conservation of flora, fauna, geological and physiographical features of special interest when formulating its own proposals. The Agency must also consult with the relevant statutory conservation agency (English Nature) where activities may affect land which is of 'special' interest.

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.

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.

Local Perspective

The upper parts of the River Hull are nationally important for the aquatic communities which they support. A substantial length is designated as a Site of Special Scientific Interest (SSSI).

At one time the Hull & East Riding LEAP area contained some of the most extensive areas of marshland in England outside of the Fens. The River Hull valley was a major wetland with areas of fen, carr woodland and open water. There is a long history of land drainage works within this part of the catchment and dramatic changes occurred to the landscape in the 18th century as large drainage schemes commenced and distinct river channels were engineered. By the mid 20th century much of the old pasture land was converted to arable.

There now remain few areas of this wetland although, Pulfin Bog and the Leven Canal are the most notable examples. The Agency is working with English Nature and Yorkshire Wildlife Trust on the future management of Pulfin Bog.

Flamborough, Hornsea Mere and Easington Lagoon are all (proposed) Special Protection Areas for birds and because of their close link with the Humber Estuary, form a complex of sites of international importance for birds. There are proposed Special Areas of Conservation (SACs) at Hornsea Mere and at Flamborough. *Figure 19* illustrates the major Areas of nature conservation in the LEAP area.

5.6.2 ARCHAEOLOGY AND HERITAGE

Background

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

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

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 archæological 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

The Hull & East Riding LEAP area has a wide range of sites and areas of historical importance. Many of these are associated with the water environment such as mills and bridges.

There are also parts of some of the major settlements such as Beverley, Driffield, Hull and the coastal towns which have a rich history reflecting industry and commerce which has now declined or disappeared. The Agency is committed to protecting these important features and working with partner bodies to ensure that they are maintained for future generations.

BRIDLINGTON
NORTH SEA
DRIFFIELD
HORNSEA
BEVERLEY
MARKET WEIGHTON
HULL
GOOLE
THE HUMBER BRIDGE
R. HUMBER
Gypsey Race
Kelk Beck
Barmston Main Drain
West Beck
Skerne Beck
Scarf Dike
Watton Beck
Aike Beck
Monk Dike
Lambwath Stream
Wolderness Drain
River Hull
Barmston Drain
Wires Beck
River Foulness
Market Weighton Canal
Keyingham Drain
TA10
TA20
0 2 4 6 8 10km
Scale

HULL & EAST RIDING NATURE CONSERVATION

KEY

1. SPELL HOWE PLANTATION
2. FORDON CHALK GRASSLANDS
3. SKED DALE
4. HODDY COWES SPRING
** 3. FLAMBOROUGH HEAD
6. FLAMBOROUGH RAILWAY CUTTING
7. BOYNTON WILLOW GARTH
8. STONE PIT & NOVA SLACK
9. CINQUEFOIL BROW & WOOD DALE
10. COTTAM WELL DALE
11. HOLM DALE & HORSE DALE
12. RIVER HULL HEADWATERS
13. WITHOW CAP SKIPSEA
14. TOPHILL LOW
15. BRYAN MILLS FIELD
* 16. HORNSEA MERE
17. LEVEN CANAL
18. PULFIN BOG
19. ENTHORPE RAILWAY CUTTING
20. KIPLINGCOTES CHALK PIT
21. RIFLE BUTTS QUARRY
22. BURTON BUSHES
23. LAMBWATH MEADOWS
24. SOUTH CLIFFE COMMON
25. HOTHAM MEADOW
26. NEWBALD BECKSIES
27. WYEDALE
28. DREWTON LANE PITS
29. EVERTHORPE QUARRY
30. BRANTINGHAM DALE
31. MELTON BOTTOM CHALK PIT
32. ROOS BOG
33. KELSEY HILL GRAVEL PITS
34. DIMLINGTON CLIFFS
* 35. THE LAGOONS
* 36. HUMBER FLATS & MARSHES:
   - a UPPER HUMBER
   - b SPURN TO SALTEND

* PROPOSED SPECIAL PROTECTION AREAS

\+ PROPOSED SPECIAL AREA OF CONSERVATION

CATCHMENT BOUNDARY

RIVER

TIDAL LIMIT

PROPOSED RAMSAR SITE

HERITAGE COAST

SITES OF SPECIAL SCIENTIFIC INTEREST

Figure 19

All local authorities in the area maintain a detailed list of known archaeological sites and the Agency recognises the Sites and Monuments Records as the primary source of archaeological information.

6.0 CURRENT STATE OF THE LOCAL AREA

6.1 AIR QUALITY

Background

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

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

The northern part of the LEAP area is predominantly rural/agricultural in nature. However, in the southern part of the area there is a large concentration of industry in and around the city of Hull and along the banks of the Humber estuary.

Monitoring Techniques:

Hull City Council has a National Environmental Technology Centre (NETCEN) air quality monitoring station providing continuous automatic monitoring of ozone, oxides of nitrogen, carbon monoxide, sulphur dioxide and particulates (PM10). There is also a mobile facility which can be placed wherever appropriate. Hull City Centre Station forms part of the national network of air quality monitoring stations.

Table 4 : Air Quality Monitoring at Hull.

Monitoring Location HULL	1994	1995
Ozone annual average (ppb) Number of hours in excess of EPAQS	16 -	16 32 (7 Days)
Nitrogen dioxide annual average (ppb) Number of hours in excess of EPAQS	24 Nil	24 Nil
Sulphur dioxide annual average (ppb) Number of 15 minutes in excess of EPAQS	9 -	9 55 (23 day)
PM10 annual average (ppb) Number of hours in excess of EPAQS	28 -	28 301 (21 days)

East Riding of Yorkshire Council are currently examining what type of monitoring will be undertaken in their part of the area. The authorities are looking at drawing together the data in a consistent manner. The Agency will be looking more closely at assessing the overall quality of air so as to be able to produce a detailed statement of air quality.

The WHO (World Health Organisation), European Commission and EPAQS (Expert Panel on Air Quality Standards) have all recommended limits on those factors indicative of air quality to protect public health, and the draft Air Quality Strategy Standards have incorporated the most appropriate of these (see table 5).

It should be noted that not all these factors are currently monitored in the area.

Ozone

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

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

Details the Ozone measurements taken at Hull City Council's monitoring station are shown in table 4. It reflects the scavenging effects of oxides of nitrogen emissions from urban and industrial activities. The maximum running 8 hour average during 1995 was 69ppb. There were 32 hours over 7 days when the running 8 hour average exceeded 50ppb, which would meet the requirements of the national air strategy.

Nitrogen Dioxide (NO_2) and Nitrogen Oxides (NO_X)

Oxides of nitrogen are formed by a reaction between nitrogen and oxygen during combustion processes. The main source are power stations. vehicular emissions and other industrial sources. The gases are released as nitrous oxide (NO) which is converted to the more toxic nitrogen dioxide (NO_2) in the presence of sunlight. This may create a photochemical smog. The nitrogen dioxide is an irritant, with similar short term health effects as for ozone although little is known about the long terms health effects of exposure. Oxides of nitrogen can affect plant growth, contribute to acid rain and exacerbate atmospheric ozone levels. Nitrogen oxides are also greenhouse gases. Little is known about the potential for long distance movement of the gases and the EC has defined them as "secondary transborder pollutants".

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

Table 4 details the measurements taken at Hull City Council's monitoring station. There were no exceedences of EC Directive limits or EQAPS limits during 1995.

Volatile Organic Compounds (VOC)

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

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.

BP Chemicals operate a monitoring station at Hedon. Limited hydrocarbon information is available.

Sulphur Dioxide (SO_2) and Smoke

Sulphur dioxide (SO_2) is an irritant to eyes and throat and can cause serious harm to people with respiratory problems. The gas reacts with water in the atmosphere to form weak sulphuric acid (i.e. acid rain). Acid deposition, both wet and dry, causes much damage to trees, crops and buildings.

The major source of SO_2 is from the combustion of fossil fuels where sulphur, trapped in the fuel (especially coal), is released on burning. Coal fired power stations are the major source of SO_2 with oil burning processes and vehicles also contributing to the emissions.

The largest proportion of SO_2 comes from coal burned at power stations for electricity generation. However it should be noted that national SO_2 emissions have reduced by over 30% in the last 10 years, a reduction from 4,898,000 to 3,774,000 tonnes per year. In particular, the Drax station is now fitted with FGD (Flue Gas Desulphurisation) and this has resulted in a major reduction in the SO_2 emitted.

There has been a significant reduction in the SO_2 levels in the last 10 years. The annual reduction in levels has been between 15 and 50%. The vast reduction in SO_2 concentrations can be attributed to initiatives such as the creation of smokeless zones, the increase in the use of gas fired central heating systems, the reduction in the use of open coal fires and the reduction in the number of households receiving free or subsidised coal. There is a continuing programme in the area of introducing smokeless zones in the area which are designated and enforced by district councils.

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

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

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

Table 4 details the measurements taken at Hull City Council's monitoring station. To meet the national air strategy objective, no more than 35 exceedences of the 15 minute means can occur.

Acid Deposition

This phenomenon is caused by airborne pollutants such as SO_2 and NO_X which readily dissolve in rain water forming weak sulphuric and nitric acid. The resultant rain water can be acidic in nature having a pH value of less than 4. It should be recognised that it is not only the concentration of acids which is important, but also the total rainfall at a site. Areas with the highest rainfall also tend to have the highest amounts of wet deposited acidity. Dry deposition involves the settling out of acidic particles from the air ands can cause extensive damage to crops and buildings, however this tends to be localised in nature.

The main contributors to the acid rain problem are coal fired power stations, especially those burning coal with a high sulphur content. These emit SO_2 which reacts with water vapour in the atmosphere to form weak sulphuric acid. Similarly burning coal with a high chlorine content contributes to the formation of hydrochloric acid. Emissions of SO_2 are decreasing as desulphurisation technology is installed at power stations.

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

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

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

Routine monitoring results are given below:

Acid rain deposition

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

*There is no Acid deposition monitoring station in the LEAP area. High Muffles in the North Yorkshire Moors National Park, is the closest. This information suggests that there is a downward trend in the sulphur content of the rain measured at High Muffles. However, an interpretation of trends in the monitoring data of the last ten years monitoring data is in preparation as part of the formal publication of the 1995 Monitoring Network information.

Lead

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

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

Slight increases in lead levels have occurred in recent years, owing to an increase in overall car ownership. Lead levels are expected to stay constant for a while as increasing car ownership is balanced against the reduction in circulation of older cars which use leaded petrol.

Particulates

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

The adverse effects of particulates on human health depend on chemical composition, such as the presence of trace metals and hydrocarbons, and on size, which determines the site of deposition on the respiratory tract.

Table 4 details the measurements taken at Hull City Council's monitoring station. To meet the national air strategy objective, no more than 88 exceedences of the rolling 24 hour means can occur.

Industrial Monitoring by the Environment Agency

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

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

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

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

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

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

Integrated Pollution Prevention and Control

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

The IPPC Directive extends integrated pollution control to a much wider range of human activities. For example certain agricultural operations, such as intensive rearing of poultry or pigs are included in the Directive.

Table 5: Summary of guidelines on the recommended limits.

	EUROPE	WHO	EPAQS	National Air Quality Strategy Standards (to be achieved by 2005)
OZONE	Protection threshold 55ppb fixed 8hour mean(08.00-17.00)	8 hourly <60 ppb	8 hourly mean 50 ppb	50ppb, measured as the 97th percentile*
NO2	European directive 85/203 sets limits to protect human health at 200 $\mu g/m^3$ or 104.6 ppb (98 percentile of hourly average).	hourly mean 110 ppb annual mean 21-26 ppb	150ppb hourly mean 21 ppb annual mean	150 ppb hourly mean* 21 ppb annual mean*
SO2	European Commission; limit 129 ppb 98th percentile daily means for year Annual average 45 ppb	10 minute mean 175ppb daily mean 44ppb annual mean 17ppb	100 ppb 15 minute mean	100 ppb, measured as the 99.9th percentile*
VOC - Benzene - Butadiene	-	-	5 ppb annual mean 1 ppb annual mean	5 ppb annual mean 1 ppb annual mean
BLACK SMOKE	80 $\mu g/m^3$ annual average.	50 μ/m^3 annual 125 μ/m^3 daily	-	-
LEAD	-	-	0.5 $\mu g/m^3$ annual mean	0.5 $\mu g/m^3$ annual mean
PM10	-	-	50 $\mu g/m^3$ 24 hour mean	50 $\mu g/m^3$, measured as the 99th percentile*

* provisional, to be reviewed in 1999.

6.2 LAND - WASTE DISPOSAL

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.

6.2.1 HOUSEHOLD WASTE

Background

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;
- light weighting 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.

Current Status

In the last financial year the two unitary authorities, Hull City and East Riding of Yorkshire, which encompass the Hull & East Riding catchment, collected 108,000 and 148,000 tonnes of household waste respectively. The boundary for the East Riding of Yorkshire extends beyond the Hull & East Riding catchment boundary, therefore a small percentage of the waste collected by them will have been produced outside the catchment.

6.2.2 INDUSTRIAL AND COMMERCIAL WASTE

Background

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.

Current Status

Compared to the national average, the amount of industrial and commercial waste generated within the area is quite low. The majority of this waste is disposed of within the area. In total less than 450,000 tonnes of industrial and commercial waste is disposed of at sites within the Hull & East Riding area. Of that tonnage approximately 222,000 tonnes is construction and demolition waste. This waste stream has a considerable potential for increased recycling. Recognising this the Government has set a target to recycle 78% of the national annual arising of 70 million tonnes by 2006. The current figure is 30%. Using construction and demolition waste in this way has a double benefit, reducing both the amount of this waste which is landfilled and the environmental impact of quarrying primary minerals.

6.2.3 SPECIAL WASTE

Background

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.

Current Status

There are nine predominant types of special wastes disposed of in the area, they are; contaminated packaging, oil contaminated waste, asbestos, contaminated land, filter material and effluent sludge waste and solid tars/paint/ink waste. It is estimated that 2,500 tonnes of special waste, excluding contaminated land, is disposed of within this area next year. The recent revision of the definition of special waste (Sept 1996), encompassing wastes previously not regarded as such, has caused the amount of special wastes to increase.

6.2.4 HOUSEHOLD WASTE RECYCLING AND COMPOSTING

Background

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.

Current Status

There are approximately 200 recycling sites in the Hull & East Riding area. Although the local authorities in the area only came into being one year ago, within that year they have shown their commitment to recycling. Of the household waste collected within the area in the last financial year, approximately 8% is recycled by the local authorities overall.

Composting is recognised as one of the most environmentally friendly ways of disposing of household waste. Nine out of the ten civic amenity sites in the East Riding of Yorkshire are "green waste sites", these sites have specially designated skips which take in waste of an organic nature. This waste is then taken to one of three sites (two of which are in the catchment) and turned into a soil conditioner. The process takes sixteen weeks and involves several stages. At the moment this conditioner is used to supplement the soils used in the final restoration of landfill sites.

On a smaller scale "home composting" is carried out by many households within the area. Hull City Council have however, carried out a "Home composting trial". Volunteers were asked to test various systems, feeding back their comments to the Hull City Council. The success rate of the composting bins and wormeries on trail was extremely high, approximately 87% of households within the trial were satisfied with the system they were trialing.

Home composting reduces the amount of waste for collection and thus the amount of waste for landfill. In this way home composting reduces disposal costs for local authorities. The initiative of households is recognised and it is hoped that more households will be encouraged to set up their own home composting systems.

6.2.5 MATERIALS RECYCLING

Background

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.

Current Status

Many companies within the area have contacted the Environment Agency for help and advice regarding "Producer Responsibility" and in particular the "Packaging Regulations". At this time the Agency is unable to estimate how many companies will be affected by the regulations within the Hull & East Riding catchment, but although the area is mainly rural, this figure could be quite significant due to Hull's industrial and commercial base.

6.2.6 ENERGY FROM WASTE

Background

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.

Current Status

Waste incineration with energy recovery is an option within the catchment. The ability to reduce waste going to landfill through energy recovery is most attractive. This could be investigated further by interested parties. However as far as the Environment Agency is aware, there are no plans at the moment for the construction of such a facility.

The utilization of landfill gas for the production of energy is being considered by one site within the area. The energy recovered can be used to power the site or it can be sourced into the national grid. This is an attractive option for a landfill site licensed to take house hold waste, as household waste is the main putrescible and therefore the main methane producing waste.

6.2.7 WASTE GOING TO LANDFILL

Background

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

Approximately 650,000 tonnes of controlled waste is landfilled per year in the LEAP area. Landfill is currently the only final disposal method available for wastes in the LEAP area. As landfill becomes more expensive due to the landfill tax and the imposition of greater environmental protection measures, recycling options such as composting become a more attractive alternative.

6.3 WATER

6.3.1 WATER QUALITY

Background

Rivers and tributaries in the River Hull Headwaters are mainly of high quality water, suitable for abstraction for drinking water and capable of supporting both cyprinid and salmonid fisheries. There are however, a few short stretches with moderate water quality, specifically the Driffield Canal which require upgrading to meet the Environment Agency's Water Quality Objectives.

A comprehensive water quality monitoring programme enables the Agency to assess whether or not the River Hull objectives are on target to be reached and more importantly, to ensure compliance with the relevant European Commission (EC) Directives. There are a number of EC directives which apply in the Hull & East Riding LEAP area (see Appendix B).

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

The GQA scheme is used to make regular assessments of the quality of rivers to monitor trends over time and to compare rivers in different areas. Four components are being developed for the GQA assessment - general chemistry, nutrients, aesthetics and biology - each providing a discrete 'window' on the quality of the river stretches. The general chemistry & biology components of the GQA are now in use and they are made up of six grades (A-F) of defined standards for Dissolved Oxygen (DO), Biochemical Oxygen Demand (BOD) and Total Ammonia (see Appendix C). In the GQA chemical quality system A and B are classed as good quality, C and D are fair quality and E and F are poor quality, these are shown on *figures 20 & 21*.

The remaining two GQA windows (nutrients and aesthetics) are under development and will be applied when available.

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

HULL & EAST RIDING
GOA 1995
CHEMISTRY CLASSIFICATION

KEY

- CATCHMENT BOUNDARY
- RIVER
- TIDAL LIMIT
- SALINE
- CLASS A
- CLASS B
- CLASS C
- CLASS D
- CLASS E
- CLASS F
- UNCLASSIFIED

Figure 20

HULL & EAST RIDING
GOA 1995
BIOLOGY CLASSIFICATION

KEY

- CATCHMENT BOUNDARY
- RIVER
- TIDAL LIMIT
- CLASS A
- CLASS B
- CLASS C
- CLASS D
- CLASS E
- CLASS F
- UNCLASSIFIED

Figure 21

HULL & EAST RIDING STRETCHES FAILING TO MEET WATER QUALITY TARGETS

KEY

- CATCHMENT BOUNDARY
- RIVER
- TIDAL LIMIT
- STRETCHES FAILING TO MEET WATER QUALITY TARGETS

Figure 22

Current Status

River Hull & Tributaries

The Hull and tributaries subcatchment measures 123 km in length with approx. 75% of this in quality Class C. Problems of intermittent farm waste causes deterioration of the river at Skerne Beck/Elmswell Beck. Farm campaigns as a means of pollution prevention will be of great benefit to this area. Since the river is an important source of drinking water with potable abstraction at Hempholme, protection of the surface and groundwaters is important. Due to the highly agricultural nature of the area, inspection campaigns aim to target farming practices paying particular attention to whether Farm Regulations (1991) are being adopted and adhered to by the local farming community. The Agency will also closely monitor and advise on sheep dip disposal, agrochemical spray applications to crops, disposal of residual chemical sprays, slurry application rates in sensitive areas such as Nitrate Sensitive Areas and near borehole and surface water abstraction points and the design and utilisation of slurry, silage and oil storage facilities.

The four commercial fish farms in this subcatchment which abstract and discharge to the West Beck system, pose a particular threat to chemical and biological water quality. The Agency has a strict consenting regime for fish farms and improvements have been made at some farms. The main problem lies with abstraction which results in extremely low flows and ultimately water quality deterioration downstream due to reduced dilution.

Legal action has and will continue to be taken against dischargers that persistently fail to meet their discharge consent conditions. Problems also occur due to occasional mass escapes of stocks from fish farms. A major project is underway to review the abstraction and discharge rates at all the fish farms in an attempt to improve water quality.

At Scurf Dyke, problems affecting water quality include premature operation of combined sewer overflows at Cranswick village and farm waste problems and industrial runoff, eg. at Cranswick. Difficulties associated with pig rearing occurs at Pitwherry Drain and Old Howe and discharges of sewage effluent, for example from Beeford, cause problems with eutrophication due to nutrient enrichment. In Ella Dyke, problems concerned with sewage treatment works, one Yorkshire Water owned and one Crown owned have highlighted the need to review the discharge consents to counteract the minimal dilution water available in the receiving stream. This may involve further capital investment schemes on improvements in the future.

At Driffield, the Canal fails to meet the chemical and biological quality objectives and downstream of Driffield Sewage Treatment Works, the water quality deteriorates further. This is primarily due to the premature operation of CSOs into Driffield Beck from the towns sewers and discharges from Driffield Sewage Treatment Works.

A major capital investment programme by YWS at Driffield due for completion in 1997 will bring about a significant improvement in the water quality for the receiving Driffield Canal. The scheme involves a major upgrade of the Driffield sewage treatment works and elimination of several unsatisfactory CSOs.

A recent initiative to consider practical measures for the improvement of Beverley Beck will see the Agency playing a principal role in a comprehensive task group study of the watercourse. The exercise will involve the local authority, water company and other local interests.

Work has already began on improving the water quality of the Beverley Beck with the implementation of better screening facilities on the CSO. This is an interim to protect the beck until arrangements are made by YWS to abandon the overflow and divert all storm flows to the R Hull. This will go a long way to improving the aesthetic quality of the area and more importantly, remove the pollution source once and for all to the benefit of all water users in the area.

Under the UWWTD, YWS are required to improve the effluent discharge quality at the East and West Hull sewage pumping stations. A major capital investment programme in Hull, costing around £200m will bring about significant improvements in the water quality of the Humber Estuary, to the benefit of all water users.

Coast & Drains to the Humber Estuarv & North Sea

There are 12 bathing beaches, designated under the EC Bathing Waters Directive along the coast stretching from Easington to Flamborough Head. Although there has been 100% compliance to the Directive over the past few years, there are still localised 'hot spots' where further remedial work on sewage treatment installations and combined sewer overflows are required. In particular, the CSOs discharging to the Gypsey Race are undergoing remediation work to reduce the spill frequency and volume, improving both the aesthetic quality and the water quality for all water users in Bridlington.

Premature operation of combined storm overflows into the area around Bridlington Harbour presents a major problem to the lower reaches of the Gypsey Race and puts at risk the Bridlington Bay and North and South Bay areas. The Agency has received public complaints about the combined sewer overflows that discharge crude sewage into an area of high amenity and recreational importance and large scale capital expenditure is required to alleviate the problems. An effluent treatment plant, affording secondary treatment is planned by YWS, to be constructed before the year 2000. This is above the requirements of the Urban Waste Water Treatment Directive and will bring significant bathing water quality improvements to the Bridlington area. Similarly, improvements to sewerage and sewage treatment systems on Gypsey Race and at Hornsea are on target.

The water quality of Gypsey Race is generally of good quality despite problems of low flows leading to lack of dilution. From its source to Rudston, where a slight deterioration occurs due to the effects of Rudston Sewage Treatment Works, the quality is Class C. Self purification then returns the river to Class B.

Auburn Beck suffers problems of water quality due to rudimentary sewage disposal facilities, in particular foul sewer outfalls at Bessingby village, although these are now to be connected to the Bridlington Pumping Station in a scheme proposed by Yorkshire Water. As mentioned above, sporadic pollution from the Carnaby Industrial Estate is the subject of ongoing pollution control.

In the coastal area of Holderness, there is little use of the drains as a water resource. The Chalk aquifer is poor quality below the Holderness clays with elevated chloride levels and is not used as a water resource except for one industrial abstraction. The upper reaches of Winestead Drain meet the quality objective, however, the middle and lower reaches fail due to the fact that Hollym village has no main/foul drainage treatment facilities and all foul drainage from the village flows to Hollym Drain and consequently, Winestead Drain.

In Ottringham village, there is rudimentary treatment facilities, ie. septic tanks and foul sewer outlets which cause pollution problems in the Ottringham Drain. There have been repeated complaints regarding the state of this watercourse and the Agency is involved with respect to further developments, however, liaison with YWS and local Council members is ongoing to find a long term solution. This would involve capital expenditure by Yorkshire Water Services.

A similar problem occurs in Barmston Main Drain which receives sewage effluent from outlying village areas. A major drive towards the improved treatment of domestic sewage (tertiary treatment) and an intensive agricultural inspection programme would benefit the water quality in this area.

Table 6: Improvement Schemes for Estuarial Discharges

Scheme	Proposal	Expected Completion Date
Hull East & West	Provision of preliminary, primary and secondary treatment	Dec 2000
Bransholme	Diversion of foul flows from STW at Bransholme to the new Hull Waste Water Treatment Works	Dec 2000
Brough	Provision of preliminary and primary treatment	Dec 2005
Ellerker	Provision of preliminary and primary treatment. extension of outfall to mean low water mark	Dec 2005
Hedon	Diversion of part flows to Hull Waste Water Treatment Works	Dec 2000

Table 7: Improvement Schemes for Coastal Water Discharges

Scheme	Proposal	Anticipated Start Date	Expected Completion Date
Gypsey Race CSOs	Elimination of trade effluent inputs t the Gypsey race, with transfer to the Bridlington headworks. A full rationalisation and elimination of CSP discharges by the diversion of flows to detention tanks and significant reduction in spill volumes and frequencies during storm conditions	Sept 1996	Sept 1998
Bridlington North Bay CSOs	Significant reduction of spill volumes and frequencies at three CSOs with improved screening and removal during storm conditions.	July 1999	March 2000
Bridlington STW	To comply with the UWWTD. To include secondary and tertiary treatment by UV disinfection	TBD	Dec 2000
Flamborough Lighthouse septic tank	Total elimination of a settled sewage discharge in a sensitive area. Diversion of all foul flows to a sewage treatment works	TBD	Before April 1998
Bessingby Village foul sewer outfall	Total elimination of two crude sewage discharges by diversion of all flows to Bridlington STW	Ongoing	Dec 1997
Wilsthorpe Village foul sewer outfall	Total elimination of a crude sewage discharge by diversion of all flows to Bridlington STW	Sept 1996	March 1997
Hornsea long sea outfall	Provision of a sewage treatment works to comply with the UWWTD. Elimination of a crude sewage discharge.	TBD	Dec 2005
Withernsea long sea outfall	To comply with the UWWTD. Elimination of a crude sewage discharge by connection to the sewage treatment works	TBD	Dec 2005
Note: All schemes, upon completion will give significant improvements in coastal water quality and will improve the aesthetic value in all bathing water areas.			

UV = Ultra Violet TBD = To be determined UWWTD = Urban Waste Water Treatment Directive

Market Weighton Canal & River Foulness

In the subcatchment, there are only two major sewage treatment works and therefore, discharges of partially treated sewage effluents from septic tanks in outlying villages present problems and affect the chemical and biological quality of the water environment. Water quality in the initial stretches of the Market Weighton Beck achieves the set quality objective despite having inputs of effluent from intermittent discharges of oily wastes from Market Weighton town and farm waste discharges due to bad agricultural practices sometimes carried out in the Catchment. The stretch of river downstream from Market Weighton to its confluence with the Foulness fails to achieve the objective due to the deposition of sludge solids at a point further downstream from the Market Weighton Sewage Treatment Works outfall. An improvement scheme has commenced for this work and therefore, subsequent improvements to water quality downstream is anticipated. Further possible causes of this downgrading may be due to inputs from a tributary accepting airfield drainage where there are problems associated with septic tank effluent and intermittent discharges from industrial activities.

The stretch of Canal downstream of the confluence with the River Foulness to the confluence with the River Humber achieves its water quality objective and at this point, is a prime fishery. There are however, consented emergency overflows to the Canal at Newport which have been known to operate under dry weather conditions due to pump failures which cause intermittent pollution problems and pose a threat to fish populations in the area. There are no major discharges from sewage treatment works in this area and foul drainage from the Newport area has been diverted to Straddlethorpe pumping station at Gilberdyke and is discharged to the tidal Ouse at Blacktoft.

An improvement at Eden Value due to the company's large scale capital expenditure on the effluent treatment plant has resulted in an improvement in the quality of effluent being discharged to the Foulness. The improvement in the quality of this effluent should be reflected in an improvement in the biological water quality in the downstream area. In addition, the Agency will complete a Farm Waste survey on all the farms on the Foulness Catchment to ensure that the Code of Good Agricultural Practice is being adhered to. A major concern is that of water abstraction from the river and the Agency ensures that a residual flow is kept in the river at all times via a strict licensing regime.

6.3.2 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.

Current Status

The nature conservation value of West Beck is reflected in the good biological water quality of the headwaters. Below this the biological water quality deteriorates mainly as a result of fish farm abstractions and discharges and further downstream sewage effluent.

The lower reaches of the River Hull have supported a reasonably stable estuarine fauna although reflecting a poor biological quality with sewage effluent being the major cause. Although the river remains tidal at Beverley the animals present are typically freshwater species and again reflect a poor biological water quality, due to Beverley sewage treatment works and other upstream inputs.

Biologically the drains to the coast have a restricted animal life as a result of organic enrichment arising from agricultural practices and sewage inputs. These channels also tend to be habitat poor and subject to a management regime that reduces the biological and conservation interest. The drains to the Humber Estuary area are also poor in terms of biological water quality, the restricted invertebrate life reflecting the organic inputs from agriculture and sewage effluents.

The animal life in Weighton Beck and the Market Weighton Canal is indicative of a poor biological water quality caused by long term organic pollution due to a build up of organically enriched sediments that have not yet been removed through natural flushing.

6.3.3 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 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

Spring flows from the Chalk provide the headwaters of the River Hull system with a large flow of good quality water, although nitrates may be elevated. The flow regime of the springs and the River Hull is very dominated by the groundwater level in the chalk and the river has a very distinct flow pattern with few 'flash' surface water runoff events. There is little abstraction of groundwater from the chalk in most of the Gypsey Race area, except in the vicinity of Bridlington where there are abstractions for public water supply and for industrial use.

During low flow conditions, drinking water supply may be augmented by transfer of supplies using the Yorkshire Grid. Treated water can be transferred from the Yorkshire Water Treatment Works at Barmby, easing the demand on resources in the East Riding.

A report entitled "Regional Water Resources Strategy" was published in July 1994 and this report is currently being reviewed. The Water Resources Strategy and future updates will continue to be implemented via the licensing process.

A methodology has been produced 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 in 1998.

6.3.4 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, see *figure 22*. 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%.

HULL & EAST RIDING FLOOD DEFENCE LAND USE CLASSIFICATION

KEY

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

CATCHMENT BOUNDARY

RIVER

TIDAL LIMIT

Figure 23

Table 8: Flood Defence Standards of Service

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

Current Status

Flood protection from the tidal River Humber is provided mainly by earth embankments, although hard defences such as the flood wall at Paull Village have been constructed where space is restricted. Through these embankments are a number of large outfall cloughs which allow the various drainage systems to discharge to the Humber, whilst preventing the backflow of tidal water. These cloughs operate automatically twice a day as the tides fall.

To stop tidal water from the Humber entering the River Hull and overtopping the City's flood defences, a barrier was constructed at the mouth of the Hull. It was completed in 1979 at a cost of £4m and is the District's largest flood defence structure. Over the last two years it has recently undergone a £1 million refurbishment which has included all mechanical, electrical and control aspects as well as renovation of the extensive glazing system and corrosion prevention system. Further to these works, a more comprehensive inspection of the hoisting chains is currently being undertaken and a condition report is expected by mid summer to enable the Agency to assess the need for further work.

Over recent years, deterioration has been noticed to the timber toe piling within the river channel in the Stoneferry area of Hull and sections of the bank which supports the defences have slipped.

A £3.5 million remedial scheme has been approved, the first phase of which was completed in October 1996 at a cost of £1.7 million. Phase 2 of the scheme is expected to commence during mid summer 1997 and is expected to cost some £700,000.

Of the tidal tributaries, only Watton Beck remains to be improved, although it is now protected by tidal doors which prevent backing up from the River Hull. Further work on the floodbanks is under consideration and a feasibility study is to be carried out over the

next twelve months. This study forms part of a major multifunctional investigation on the non tidal section of the upper Hull and tributaries which was started in February 1997 and is being undertaken by Halcrow Consulting Engineers. From this study, future flood defence policy in the upper Hull Catchment will be determined so as to provide a satisfactory level of flood defence whilst furthering the important environmental interests of the area.

Of importance to land drainage in the District are the pumping stations owned and operated by the Agency. In view of their 20-30 year age, a study is currently underway to establish any refurbishment and improvement requirements to ensure reliable operation for the future. The study should be completed by the end of 1997 and a programme of refurbishment produced.

Along the East Coast, the Environment Agency maintains short lengths of sea defence which stop direct flooding from the North Sea. As most of the land is above high tide level however, artificial defences are not generally required.

Severe erosion is occurring along most of this length of coastline. In general, responsibility for coastal protection lies with the relevant Maritime District Council, usually the Local Authority. The Environment Agency is only empowered to undertake work necessary to protect land and property from direct flooding by the sea.

6.4 BIODIVERSITY

Background

The 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

River Hull & Tributaries

The River Hull Headwaters support a unique Chalk stream flora in the fast flowing sections. Areas of significant conservation value include the River Hull Headwaters and Tophill Low. The water storage reservoirs of Tophill Low SSSI is the only large body of open water and attracts large numbers of birds in particular wintering waterfowl. The Agency is working with English Nature and Yorkshire Wildlife Trust on the future management of Pulfin Bog, one of the few remaining wetland areas in the LEAP area.

The flood banks within the corridor provide a good refuge for small mammals in an area where there is little pasture which attracts a good population of barn owls. Evidence of water voles, formerly common in the catchment were only found in a single location. Their numbers probably affected by predation by mink. There is also a small but significant population of otters on the upper River Hull.

Foston Beck remains a pure brown trout fishery which is maintained by both natural reproduction and occasional introduction of hatchery reared stock. At the village of Foston is a mill weir which forms an impassable barrier to fish. Below this point coarse fish populations predominate. Downstream of Skeme, fishing becomes mixed with coarse fish predominating.

Below Hempholme the coarse fish populations are occasionally damaged by variable water quality due to the effects of the tide on the discharge from Beverley sewage treatment works. This normally occurs during periods of low flows in the river. A scheme is currently being promoted by Yorkshire Water which will address these problems.

Coast & Drains to the Humber Estuary & North Sea

The coastal cliffs at Flamborough Head are formed from the most northerly outcrop of Chalk in England and are home to the only gannetry providing nesting grounds also for large colonies of Kittiwakes, Guillemots, Razorbills and Puffins. As well as its importance for birds it has a rich intertidal flora and fauna with the occurrence of certain red seaweeds being of particular interest. Other SSSIs have geological importance.

Loamworth Meadows is one of a few isolated, inland wildlife sites which is important for its damp hay meadows. Boynton Willow Garth is a site of national importance associated with Gypsey Race and is the best example of fen/carr community in the area.

The ecological characteristics of the Gypsey Race, flowing to the North Sea at Bridlington have largely been determined by flow characteristics due to the geology of the region. The Chalk stream naturally dries up at certain times and consequently Gypsey Race, although supporting a modest trout fishery is of little importance due to the instability of flows.

Flamborough, Hornsea Mere and Easington Lagoons are all Special Protection Areas for Birds and because of the close links with the Humber Estuary, an area of international importance for birds, this stretch of the coast is extremely valuable in terms of nature conservation. A little tern breeding colony has been established following substantial collaboration between the Agency and Spurn Heritage Coast Project. A new project underway is the Flamborough Head Sensitive Marine Area initiated by English Nature to raise awareness of our marine heritage.

The Agency licences commercial netting for salmon along the North Sea coast between Spurn Point and Flamborough, however the majority of fishing activity is focussed on the northern end of the area between Hornsea and Bridlington. Commercial netting for eels is also licenced in the River Humber. The Agency operates a cross warranting system with the North East Sea Fisheries Committee.

Several of the streams out falling to the River Humber are important fisheries, in particular Patrington Haven. Holderness and Barmston Drains contain substantial coarse fish populations.

Between Spurn Head and Hull three waters were previously of importance as feeding grounds for common flounder, however as a result of the construction of pumping stations on outfalls only one, known locally as Stone Creek remains accessible to fish. This drain is an important recreational fishery for many local angling matches. Unfortunately water quality has suffered, mainly due to intensive pig rearing activities in the area. Intensive agricultural campaigns have resulted in improvements to the river, however further improvements are required if the area is to regain its status as an important flounder feeding ground.

Market Weighton Canal & River Foulness

In general much of the Market Weighton Canal system and River Foulness in the western part of the catchment is poor in terms of conservation value as may be expected from areas of man made drains, water quality that is reflective of industrial, domestic and agricultural inputs, abstractions and land drainage works. These areas are important as corridors for wildlife in an arable landscape where agriculture predominates. The river is also an important fish breeding site which contributes significantly towards the maintenance of the populations in the Market Weighton Canal.

There are 11 sites of Special Scientific Interest (SSSI) in the Market Weighton Canal and Foulness area, many of these area associated with the LEAP area. These SSSIs are generally to be found at the headwaters of Market Weighton Canal and Mires Beck for example Melton Bottom Chalk Pit, Drewton Lane Pits, Newbald Becksies and Kiplingcotes Chalk Pit. Many tend to be associated with old Chalk quarries and are important for their geological exposures or Chalk grassland communities.

From Black Beck to Foss Dyke on the River Foulness the water quality deteriorates due to heavy use for agricultural abstraction and natural ochreous deposits precipitated during extreme weather conditions. The aquatic invertebrate life in this stretch also appears to be restricted due to ochreous deposits. Both the number of animals and the number of different species have been reduced in this area. Further downstream, deterioration is found due to minimal residual flow in the River Foulness. These shortfalls in the objectives are due to low flow situations and inputs from sewage treatment works, agricultural and septic tank effluents, industrial discharges and runoff.

The Mires Beck is of good quality with only sporadic problems occurring from septic tank drainage and intermittent agricultural runoff. Parts of the upper reaches of Mires Beck have been identified to be of conservation interest due to the characteristic Chalk stream flora and fauna they support. In the upper reaches the fish population is predominately brown trout which has become severely depleted by low flows and habitat destruction. Fishery deterioration in the lower reaches of this small Chalk stream are accounted for not by poor water quality but by drainage operations.

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APPENDICES

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APPENDIX A - AGENCY FUNCTIONAL AIMS AND STRATEGIES

Introduction

The Environment Agency was established on the 1 April 1996. The main aims of the Agency are detailed in the introduction on pages . Detailed below is an introduction to each of the Agency's functions, with a summary of their aims and strategies.

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 Agency aims 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.

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

- licensing waste management facilities
- regulation of IPC processes which involve waste
- subsequent supervision of licensed activities
- operation of enforcement procedures aimed at unauthorised activities
- technical administration to regulate and monitor the movement of special waste - including international movements
- registration of waste carriers and brokers and promotion of the Duty of Care
- registration of the activities exempt from licensing
- collection of information about waste arisings and the preparation of a waste management plan
- responding to planning consultations where issues concerning waste may be a relevant factor
- maintenance of a public register and the general provision of waste management information and advice.

There are a number of wastes which are not controlled by the Agency. These are;

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

Conservation

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

- conserve and enhance the wildlife, 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 has no active navigation responsibility in the North East Region.

The Agency's strategic objectives regarding recreation are:

- to maintain, develop and improve recreational use of Agency sites;
- to take account of recreation in proposals relating to any Agency function;
- to promote the use of water and associated land for recreational purposes.

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.

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.

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.

APPENDIX B: EUROPEAN DIRECTIVES

There are several European Community Directives which apply to this LEAP area:

European Commission (EC) Directives

The introduction of the European Commission (EC) Directives from 1976 to protect the water environment has had a significant impact on water quality issues. The UK has adopted the appropriate directive requirements and is incorporating them into UK legislation to complement other Agency water quality improvement measures and monitoring schemes.

Annual reports are made by the Agency to the DoE for fresh and saline waters using results from a comprehensive sampling and analysis programme. Quality assessments are made using specific numerical standards which are currently the only statutory water quality requirements. Where waters do not comply with the standards, the Agency is required to develop improvements plans to ensure the situation is remedied with an identified timescale.

The following directives apply or will apply to the Hull and East Riding area.

The Surface Water Abstraction Directive (75/440/EEC)

The Directive ensures that water abstracted from rivers or reservoirs for drinking purposes achieves standards prior to treatment and distribution to public supply. Formal arrangements are in place between the water companies and the Agency to address non-compliance and other issues.

No exceedences reported in 1996 in this catchment.

Drinking Water Directive

Owing to the importance of the River Hull catchment as a source of drinking water considerable emphasis is placed on monitoring of pesticides concentrations within the catchment. Sporadic exceedences of the 0.1μg/l limit for Isoproturon has been reported by the water companies and confirmed by the Agency's routine monitoring. However, as this low level contamination is most likely to arise from diffuse inputs, direct control by the Agency is not possible.

Dangerous Substances Directive (76/464/EEC)

The Directive sets numerical standards for identified substances, which are particularly harmful to the water environment, and these must be achieved in all waters. New substances are introduced by the EC at intervals as new environmental initiatives are taken. Compliance with Dangerous Substances Directive is assessed by monitoring for specific substances downstream of registered discharges, and at a reference site in the lower reaches of the catchment.

There were no monitored exceedences in the River Hull catchment during 1996.

The Freshwater Fisheries Directive (78/659/EEC)

The Freshwater Fisheries Directive requires that where rivers are designated and suitable for salmonid or cyprinid fish populations, the Directive's water quality standards must apply. New designations may be made by notifying the DoE and permanent deterioration of designated waters is not permitted.

The Urban Waste Water Treatment Directive (91/271/EEC)

The Directive will apply to discharges of domestic sewage and similar industrial discharges with population equivalents in excess of 2000, made to fresh and saline waters and will be implemented in the period up to 2005. Standards will be set for discharge quality levels of treatment being specified according to the receiving water quality and characteristics. The Hull Sewage Treatment Scheme will be one of the largest improvement schemes ever implemented in England and Wales.

North Sea Reduction Programme

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

Progress has been made with load reductions by the issue of consent conditions for appropriate discharges to achieve 50-70% reduction over a period 1985-1995.

The Integrated Pollution Prevention and Control Directive

Integrated Pollution Control was introduced to the UK in 1991. Since then industrial processes with a significant potential to release substances to air, water and land have been authorised under this new integrated regime. the original regulations have been modified and refined to provide an effective and apt means of regulating a select group of complex industrial processes.

The EC introduced Directive 96/61/EC "Concerning Integrated Pollution Prevention and Control" in September 1996. The requirements of this directive are currently being implemented. The likely effect of the introduction of this Directive will be to:

i alter the definition details of processes currently authorised under IPC in order to standardise across the whole of the EC;
ii introduce new industries e.g. large landfill sites, intensive livestock production to the system of integrated pollution regulation;
iii introduce new or extend the scope of pollution control eg noise.

The Agency will implement any new, or changed, regulations relevant to it's remit, will willingly provide advice and guidance to other organisations and will put it's own expertise and experience in integrated environmental management at the disposal of the policy-makers.

The EC Habitats Directive

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

The Regulations include:

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

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

The EC Directive on the Conservation of Wild Birds (79/409)

The overall purpose of the Directive is to provide for the protection, management and control of all species of naturally occurring wild birds in the EC. The Directive places an emphasis on the need to conserve bird habitats as a means of maintaining populations.

In the UK the Directive is implemented through the Wildlife and Countryside Act 1981 (as amended). Special Protection Areas (SPA) can be designated for internationally important sites. Such sites will have been previously notified as Sites of Special Scientific Interest (SSSI) and the SPA designation places no additional responsibilities on the owners or occupiers of the site. The designation requires that appropriate steps should be taken to avoid damage to or deterioration of the SPA except in circumstances where there is an over-riding public interest.

APPENDIX C: GENERAL QUALITY ASSESSMENT CLASSIFICATION

The General Quality Assessment (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 and biology components 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 two GQA windows (nutrients and aesthetics) are still under development and will be applied when available.

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 : 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.

Class	Dissolved Oxygen % saturation 10 percentile	BOD (ATU) mg/l 90 percentile	Total Ammonia mg N/l 90 percentile	Un-ionised Ammonia mg N/l 95 percentile	pH lower limit as 5 percentile; upper limit as 95 percentile	Hardness mg/l Ca CO_3	Dissolved Copper µg/l 95 percentile	Total Zinc µg/l 95 percentile
RE1	80	2.5	0.25	0.021	6.0 - 9.0	≤10 >10 and ≤50 >50 and ≤100 > 100	5 22 40 112	30 200 300 500
RE2	70	4.0	0.6	0.021	6.0 - 9.0	≤10 >10 and ≤50 >50 and ≤100 > 100	5 22 40 112	30 200 300 500
RE3	60	6.0	1.3	0.021	6.0 - 9.0	≤10 >10 and ≤50 >50 and ≤100 > 100	5 22 40 112	300 700 1000 2000
RE4	50	8.0	2.5	-	6.0 - 9.0	≤10 >10 and ≤50 >50 and ≤100 > 100	5 22 40 112	300 700 1000 2000
RE5	20	15.0	9.0	-	-	-	-	-

Class RE 1: Water of very good quality (suitable for all fish species).
Class RE 2: Water of good quality (suitable for all fish species).
Class RE 3: Water of fair quality (suitable for high class coarse fish populations).
Class RE 4: Water of fair quality (suitable for coarse fish populations).
Class RE 5: Water of poor quality (likely to limit coarse fish populations).
Unclassified: Water of bad quality (fish are unlikely to be present), or insufficient data available by which to classify water quality.

APPENDIX E: 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.
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.
Biochemical Oxygen Demand	A measure of the amount of oxygen in water during the breakdown of organic matter.
Catchment	The total area of land which contributes surface water to a specified watercourse or water body.
Combined Sewer Overflow (CSO)	An overflow structure which permits a discharge from the sewerage system during wet weather conditions.
Controlled Waste	Defined by the Water Resources Act 1991 Part III Section 104. They include household, industrial and commercial waste.
Dangerous Substances	Substances defined by the European Commission as in need of special control because of their toxicity, bioaccumulation and persistence.
Discharge Consent	A statutory document issued by the Agency under Schedule 10 of the Water Resources Act 1991 to indicate any limits and conditions on the discharge of an effluent to a controlled water.

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.
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.
'Hands Off Flow'	Hands Off Flow (HOF): Also known as the prescribed flow, it represents the flow at which abstraction must cease. The HOF ensures that the environmental needs of the river will be protected, as will existing protected rights (licensed and exempt abstractions), downstream quality requirements and minimum flows.
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.
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.
Leaching	Removal of soluble substances by action of water percolating.
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 the power to carry out works to improve drainage or protect land and property against flooding on watercourses designated as "Main River". The Agency does not have the legal power to spend public funds on drainage or flood protection works on water courses not designated as "Main River".
Methane	CH_4, a colourless, odourless, flammable gas, formed during the anaerobic decomposition of putrescible matter. It forms explosive mixture in the range 5-15% methane in air.
μg/l	Microgrammes per litre.
mg/l	Milligrams per litre.
National Nature Reserve	An area of land designated by English Nature under Section 35 of the Wildlife and Countryside Act 1981. They are managed by or on behalf of English Nature specifically for wildlife conservation purposes.
Potable Water	Water of suitable quality for drinking.
Prescribed Flow	A flow set to protect lawful downstream users and the aquatic environment.
Public Surface Water Sewer	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.

Return Period	Refers to the return period of a flood. Flood events are described in terms of the frequency at which, on average a certain severity of flood is exceeded. This frequency is usually expressed as a return period in years, e.g. 1 in 50 years.
Riparian Owner	A person/organisation with property rights on a river bank.
River Corridor	Land which has visual, physical or ecological links to a watercourse and which is dependent on the quality or level of the water within the channel.
Regional Telemetry System (RTS)	The Regional Telemetry System allows up-to-the-minute information to be gathered by computers at an Agency office from outstations within the area. These outstations monitor river water level, flow and quality.
Sewage Sludge	Sludge resulting from the treatment of raw sewage. It typically contains 70-90% water, prior to dewatering.
Silage	A winter feed for cattle. Silage is produced in the summer by bacterial action on freshly cut grass and is stored in a clamp or silo. Silage production results in the formation of a highly polluting effluent.
Site of Special Scientific Interest	A site designated under the Wildlife and Countryside Act 1981 by English Nature or the Countryside Council for Wales, being of national importance for its wildlife, geological or geomorphological features.
Slurry	Animal waste in liquid form. Slurry is usually collected and stored in tanks or lagoons and is spread on farm land at a later date.
Special Protection Areas (SPA)	Special Protection Areas are internationally important sites designated under the EEC Wild Birds Directive.
Springs	Natural emergence of groundwater at the surface.
Sustainable (development)	Capable of being maintained at a steady level

	without exhausting natural resources or causing ecological damage.
Trade Effluent	Effluent derived from a commercial process/premises.
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 F - ABBREVIATIONS

3Es	Emissions, Economics & Efficiency
ADAS	Agricultural Development & Advisory Service
AMP	Asset Management Plan
BASIS	British Agricultural Standards Inspection Scheme
BATNEEC	Best Available Techniques Not Entailing Excessive Cost
BOD	Biochemical Oxygen Demand
COGAP	Code of Good Agricultural Practice
CSO	Combined Sewage Overflow
DO	Dissolved Oxygen
DoE	Department of the Environment
EA95	Environment Act 1995
EC	European Commission
EPA90	Environmental Protection Act 1990
EPAQS	Expert Panel on Air Quality Standards
EU	European Union
FWAG	Farming and Wildlife Advisory Group
GQA	General Quality Assessment
HECAG	Humber Estuary Coastal Authorities Group
IDB	Internal Drainage Board
IPC	Integrated Pollution Control
IPPC	Integrated Pollution Prevention and Control
LEAP	Local Environment Agency Plan
LPA	Local Planning Authority
MAFF	Ministry of Agriculture Fisheries and Food
NETCEN	National Environmental Technology Centre
NFFO	Non Fossil Fuel Obligation
NSA	Nitrate Sensitive Area
NVZ	Nitrate Vulnerable Zone
OFWAT	Office of Water Services
ppb	Parts per Billion
PPG	Planning Policy Guidance
RE	River Ecosystem
RFFS	Regional Flow Forecasting System
RPG	Regional Planning Guidance
RTS	Regional Telemetry System
RSA93	Radioactive Substances Act 1993
RSPB	Royal Society for the Protection of Birds
SAM	Scheduled Ancient Monument
SMR	Site and Monuments Record
SSSI	Site of Special Scientific Interest
STW	Sewage Treatment Works
SWALP	Surface Water Abstraction Licensing Policy
UK	United Kingdom
UWWTD	Urban Waste Water Treatment Directive
WHO	World Health Organisation
WLMP	Water Level Management Plan
WQO	Water Quality Objectives
YWS	Yorkshire Water Services

CO_2	Carbon Dioxide
NO	Nitrous Oxide
NO_2	Nitrogen Dioxide
NO_X	Nitrogen Oxides
SO_2	Sulphur Dioxide

MANAGEMENT AND CONTACTS:

The Environment Agency delivers a service to its customers, with the emphasis on authority and accountability at the most local level possible. It aims to be cost-effective and efficient and to offer the best service and value for money.

Head Office is responsible for overall policy and relationships with national bodies including Government.

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The 24-hour emergency hotline number for reporting all environmental incidents relating to air, land and water.

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