

GRIMSBY CATCHMENT MANAGEMENT PLAN ACTION PLAN



ENVIRONMENT AGENCY

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ANGLIAN REGION

Kingfisher House, Goldhay Way,
Orton Goldhay,
Peterborough PE2 5ZR



NRA

*National Rivers Authority
Anglian Region*

SEPTEMBER 1995

KEY DETAILS

Area 481 km²

Ground Levels Maximum 170m ODN
 Minimum 2m ODN

ADMINISTRATIVE DETAILS

County Councils Humberside
 Lincolnshire

District Councils Glanford
 West Lindsey
 Lindsey East

Borough Councils Gt.Grimsby
 Cleethorpes

NRA Anglian Region - Northern Area
 Estimated population 175,000

SETTLEMENTS (> 3000 population)

Barton 9,422
 Gt.Grimsby 90,517
 Cleethorpes 34,722
 Humberston 5,514
 Immingham 11,138
 New Waltham 3,623
 Waltham 6,157

UTILITIES

East Midlands Electricity
 British Gas, East Midlands
 British Telecom, Peterborough District
 Water Co. Anglian Water Services Ltd

MAJOR S.T.W.

Laceby
 Immingham
 Pyewipe
 Newton Marsh (outside of Catchment)

WATER QUALITY

Length of river in River Ecosystem Class

Class	Km
1	0
2	5.3
3	32.5
4	16.3
5	7.0

WATER RESOURCES AVAILABILITY

Ground Water	All available resources fully committed
Surface Water	Only reliably available during winter

FLOOD PROTECTION

Length of Statutory Main River 61Km
 Length of NRA Tidal Defences 41.4Km

FISHERIES

Length of cyprinid fishery	6.75Km
Length of salmonid fishery	3.35Km

CONSERVATION

Special Sites of Scientific Interest	7
Site of National Conservation Interest	10
Nature Reserves	10
Scheduled Ancient Monuments	15



NRA

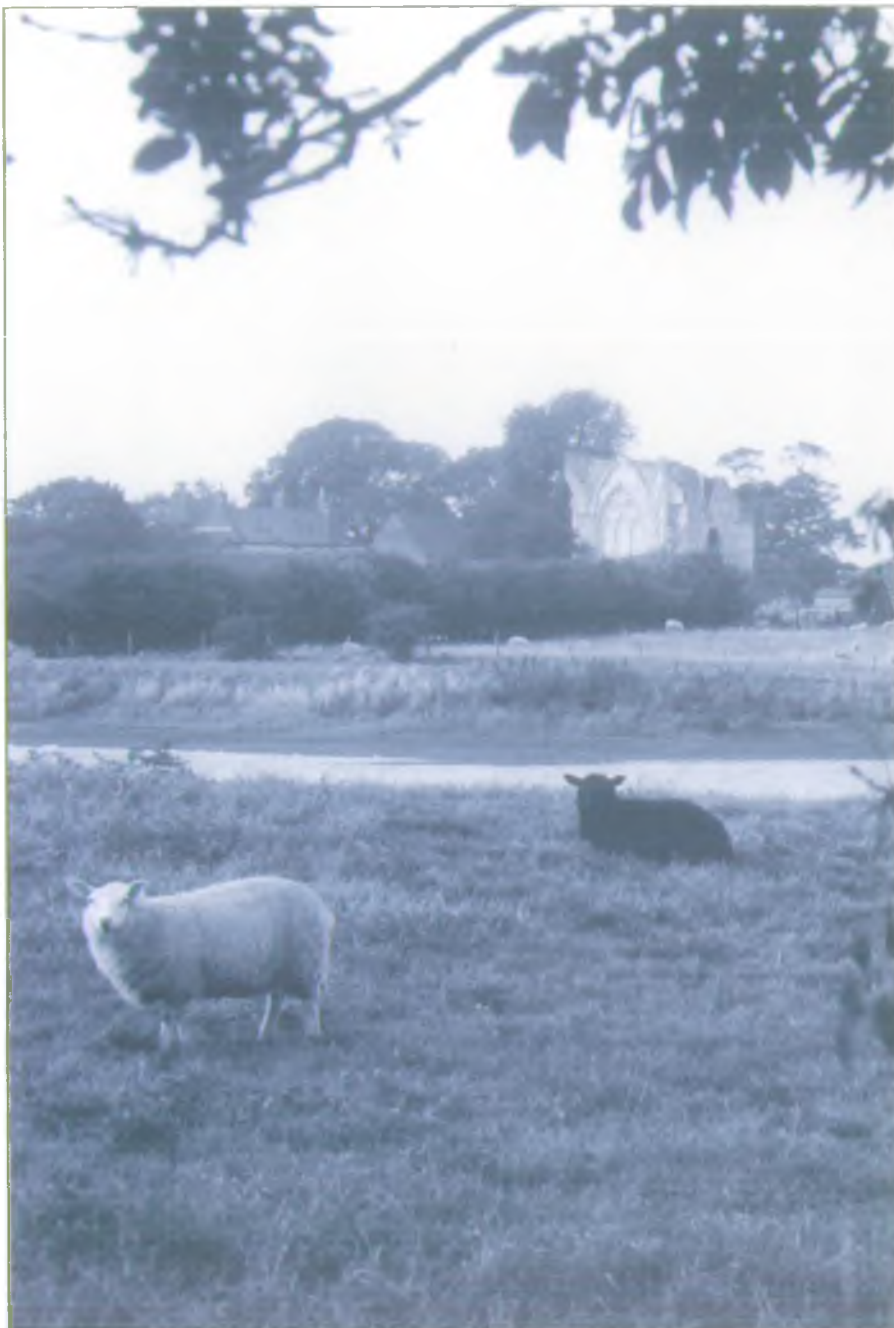
National Rivers Authority

**NRA ANGLIAN REGION
AND GRIMSBY AREA**



**ANGLIAN
REGION**





Thornton Abbey

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ENVIRONMENT AGENCY



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1. VISION FOR THE CATCHMENT

The Grimsby Catchment has a particularly diverse range of water related uses and needs. It has areas of concentrated urban, industrial, and agricultural development protected by sea defences, conservation areas of national and international importance, the Chalk Wolds, which are an Area of Outstanding Natural Beauty and from which local groundwater meets much of the Catchment's water supplies. Development brings with it environmental risks and conflicts, and this requires all those with an interest in the Catchment to work together to reconcile conflicts to protect and improve the water environment for the benefit of future generations.

The NRA's vision for this catchment is to resolve the issues identified within this report, key amongst these being:

- to ensure the water resources of the Chalk Aquifer are effectively managed and protected from the adverse effects of over-commitment and pollution;
- to develop and implement water resource strategies to achieve the right balance between the needs of the water environment and those of abstractors;
- to improve the quality of rivers within the catchment, several of which are adversely affected by effluent discharges;
- to gain support from Planning Authorities for NRA policies and strategies and to ensure the adoption of a strategic approach to infrastructure development;
- to improve the quality of the Estuary and associated bathing waters;
- to ensure that important urban, industrial and conservation areas are provided with effective flood defences;
- to protect the important conservation assets in the Catchment and improve plant and habitat diversity;
- to develop an integrated approach to resolving issues, for example the management of the River Freshney and the flood defences along the Humber.

The successful management of this catchment in the future depends on the NRA's ability to effectively respond to the various pressures exerted on the water environment, to reconcile all of the uses demanded by the community as a whole and to target available resources where they are most needed.

2. INTRODUCTION

The National Rivers Authority (NRA) was established in 1989 as the Guardian of the Water Environment. It is committed to protecting and improving the water environment and protecting people and property from flooding.

The rivers, lakes, estuaries, and coastal waters of England and Wales have never before been subject to such large and, in some cases, rapidly increasing demands from the users of water. Many different uses interact or compete for water and will inevitably come into conflict with one another. The NRA is the major manager of the water environment in England and Wales and has the responsibility to reconcile conflicts between water users. Our Mission Statement expresses the following principles:

- We will protect and improve the water environment by the effective management of water resources and by substantial reductions in pollution.
- We will aim to provide effective defence for people and property against flooding from rivers and the sea.
- In discharging our duties, we will operate openly and balance the interest of all who benefit and use rivers, groundwaters, estuaries and coastal waters.

- We will operate in a businesslike and efficient manner.

The NRA intends to use Catchment Management Plans as a means to translate our principles and vision into Action Plans, it ensures an integrated approach and foundation for the setting of priorities and resolving conflicts within a consistent planning framework.

Catchment Management Planning involves the NRA working with local authorities, industry, commerce, water companies, the farming community, interested groups, and the general public in promoting environmental awareness and making real environmental improvements at local level that meet the community's needs. The integrated approach will enable resources to be targeted where they are most needed.

This Action Plan, outlines the areas of work and investment proposed by the NRA and other responsible parties over the next 5 years and will form the basis for improvements to the water environment in the Catchment. Progress against the Action Plan will be monitored and reported annually.



Grimsby

3. REVIEW OF THE CONSULTATION PROCESS

The Grimsby Catchment Management Plan Consultation Report was published on 30 November 1994. A meeting in Grimsby to launch the Plan was attended by representatives from industry, local authorities, environmental groups, sport and recreational groups, and other local groups with an interest in the catchment. This meeting launched the plan for a 3 month period of public consultation. Prior to the launch, pre-consultation meetings had been held with a number of key organisations as well as the Lincolnshire Catchment Panel in order that their views could be taken into consideration at an early stage.

The consultation document presents the NRA's vision for the catchment. It gives an overview of the catchment, its current status and catchment targets. Where targets are not met, shortfalls are identified and these become catchment issues for which options are developed to address the shortfall.

Consultees were asked to consider the range and extent of catchment uses and activities, express views on the issues and options, and comment on how the development of strategies and plans should be progressed.

The Grimsby Catchment adjoins the Humber Estuary Catchment, the Management Plan for which was published for consultation in July 1994. Several of the issues are common between the two plans. To ensure effective public consultation, all issues relevant to the Grimsby Catchment were included in the consultation document.

Approximately 1500 copies of the Consultation and Summary documents were distributed during the

consultation period, written comments were received from 14 organisations and several members of the public. Any factual errors in the Consultation Document that were highlighted as part of the consultation process, will be corrected and circulated to respondents.

The following is a list of names of organisations who provided written comments on the consultation report:

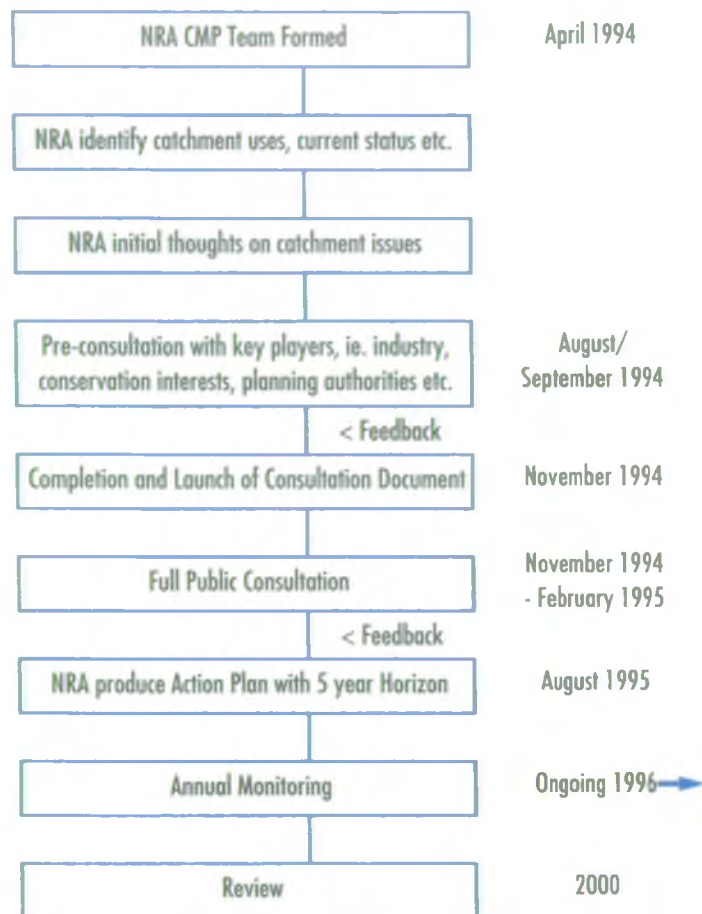
Cleethorpes Borough Council
Lincolnshire Anglers Consultative Committee
Ministry of Agriculture Fisheries and Food
Humberside County Council
Anglian Water Services
English Nature
Grimsby Borough Council
Forestry Commission
British Steel
National Farmers Union
Lincolnshire County Council
Lindsey Oil Refinery Ltd
Royal Society for the Protection of Birds
SCM Chemicals

The consultation process has given the NRA a wider appreciation of the different viewpoints of the issues and options identified. As a result of consultation, a number of options have been modified, new options included, and one new issue included (Issue 31) relating to the pressure of development posing a risk to conservation sites. These, and other, comments have been considered in the production of this Action Plan which will form the basis of ongoing monitoring, review, and discussion.



*Cleethorpes
Boating Lake*

The overall planning process is identified below.



A number of issues are common to the Grimsby and Humber Estuary Catchment Plans. The Action Plans for both have been developed to ensure a consistency of approach to the common issues identified.

CATCHMENT PLANNING TEAM

R A Baxendale	Project Leader
R Kisby	Catchment Planning Officer
D Watling	Water Resources
J Sweeney	Water Quality
J Ulyatt	Flood Defence
D Fisher	Planning Liaison
I Forbes	Fisheries, Recreation, Conservation and Navigation

CATCHMENT PANEL MEMBERS

I Biddick	Humberside County Council
N Playne	County Landowners Association
G Keeping	Lincolnshire County Council
T Richards	Lincolnshire Anglers Consultative
T Grant	Witham Fourth Internal Drainage Board
T Wilson	Lincolnshire Anglers Consultative
D Carnell	Inland Waterways Association
M Crick	Lincolnshire Wildlife Trust
R Spaight	Salmon & Trout Association
T Coles	Institute of Environmental Assessment
R Harvey	British Waterways
R B Shields	East Lindsey District Council
C Middleton	West Lindsey District Council
J Shackles	English Nature
R Wardle	Countryside Commission
N Boast	Chemical Industries Association
D Dickson	National Federation of Anglers
P Bird	Eel Fishermen
P Thompson	Tioxide UK
P Fisher	RSPB
E Smith	Anglian Water Services Ltd
J Dodsworth	Lincolnshire LFDC

4. OVERVIEW OF THE CATCHMENT

INTRODUCTION

The Grimsby Catchment is located in North Lincolnshire and South Humberside. It includes the Chalk Wolds from Caistor to the Humber and the coastal plain next to the Humber Estuary from Humberston to South Ferriby.

The Chalk Wolds, which include rolling countryside with upland rivers and streams, are predominantly agricultural and dominate the western part of the catchment. The eastern part includes substantial areas of urban and industrial development as well as

agriculture bounded to the north and east by sea defences, and important conservation sites along the Humber Estuary.

The use of water within the Catchment by a range of water dependent activities raises important issues relating to water resource management, groundwater protection, tidal defence, conservation enhancement, and the protection of water quality of both rivers and the Estuary. The Action Plan addresses each of these key features.



Oil refinery, Killingholme

4.1 CONSERVATION

Conservation interests in the catchment are recognised to be of international importance through designation of the Humber Flats and Marshes as Special Protection Area's, and Ramsar sites. In addition, there are other designated conservation sites along the edge of the Estuary, including wetland sites associated with chalk blow-wells, abandoned clay pits, mudflats, and reedbeds. These sites support massive numbers of birds, both during migratory passage and as their winter residence. The sites require careful management to sustain and protect their conservation importance, including taking account of flood defence construction and maintenance works. The need to improve the tidal defences requires the possible deleterious effects of works adjacent to these conservation sites and the wider environmental implications to be taken into account. Environmental issues were a key factor in formulating various defence options which were considered in the formulation of the NRA's Humber Estuary Tidal Defence Strategy, which has recently been published.

There are other conservation pressures in these areas of the catchment, from industry, commerce, agriculture and from housing development.

A Humber Estuary Management Strategy currently being prepared by English Nature, Local Authorities, and other groups (including the NRA) will consider the protection and development of conservation areas along the estuary fringe. The development of Water Level Management Plans such as those for Barton and Barrow Claypits and North Killingholme Pits will further consider the future well-being of statutory conservation sites.

The Chalk Wolds include Areas of Outstanding Natural Beauty and the rolling countryside contrasts with the flat coastal strip. There are a number of constraints to habitat and aquatic plant species diversity in this area related to low river flows and levels.

The development of urban and industrial areas in the lower part of the catchment, along with an intensification of farming practices have resulted in a much modified drainage system. This has impacted on habitat development and the degree of biodiversity of flora and fauna along rivers and river corridors.



4.2 FISHERIES

The Catchment is characterised by small drains and groundwater-fed rivers. The Laceby Beck/River Freshney is the largest watercourse and is the only river system currently subject to regular fishery surveys. The fish comprise a mix of salmonid and coarse fish species in the upper reaches, with more common coarse species, such as roach, common bream, perch, and pike in the downstream reaches. Coarse fishing is popular and takes place principally on the River Freshney and on several lakes throughout the catchment. Sea angling takes place on the coast around Grimsby and between Cleethorpes and East Halton.

The Catchment is characterised by a number of constraints to fishery development associated with the periodic occurrence of low or zero river flows, low lake water levels, eutrophication and saline intrusion.

4.3 FLOOD DEFENCE

4.3.1 TIDAL DEFENCES

The Catchment has around 50 kilometres of tidal defences which are vital to the protection of important urban, industrial, and conservation areas. The defences which protect these areas are a mix of earth/clay banks and hard defences and have been largely rebuilt following serious flooding in 1953. The condition of many of the defences is now giving cause for concern due to their age and condition, the effects of rising sea levels, and the gradual loss of foreshore.

The NRA are developing Shoreline Management Plans, which are intended to provide a strategic framework for the management of coastal defences for specified lengths of coast.

The NRA's Humber Estuary Tidal Defence Strategy will define the nature, extent and timing of the renewal of the defences and will take account of not only the needs of flood defence, but also the wider environmental implications of works.

The EC Habitat's Directive will have implications for flood defence works in certain statutory conservation areas along the Humber.



4.3.2 FLUVIAL DEFENCE

The Catchment does not have any major rivers. The relatively permeable Chalk Wolds give rise to some small streams which carry drainage waters across the coastal strip before discharging to the Humber Estuary. Effective drainage of the clay coastal strip is maintained by a network of largely artificial drainage channels and pumping stations operated by NRA and Internal Drainage Boards. Whilst there are a small number of local issues relating to standards of fluvial flood defence, local drainage restrictions, and siltation of river outfalls, the principal flood risks are associated with tidal flooding.

4.3.3 FLOOD WARNING

The NRA operates a flood warning service whereby the police and other organisations are advised in advance of areas likely to be affected by flooding. The warnings are phased and colour coded indicating the anticipated severity of an event and its likely impact on land and property.

4.4 WATER QUALITY

Surface water quality in the Catchment varies from the good quality associated with groundwater fed rivers and streams of the Wolds to locally poorer quality waters in the coastal strip where there are impacts from saline intrusion and from run-off and discharges from industrial areas.

The catchment's rivers discharge into the Humber Estuary. The Humber is the biggest freshwater input to the North Sea from the English coast and, in recent years, there has been increasing concern regarding the discharge of Dangerous Substances and nutrients into the North Sea. Currently, there is substantial ongoing investment in treatment plants to improve the quality of industrial and sewage effluent discharges in order to improve river, estuary, and bathing water quality.

The protection of groundwater quality is an important requirement in the catchment as Chalk groundwater is substantially developed for public and industrial supplies. The area of the Wolds is particularly vulnerable to pollution and there are concerns over the impacts of agriculture and development on groundwater quality. The development of protection zones around potable water sources and the establishing of Nitrate Sensitive Areas are recent initiatives to protect groundwater quality.



4.5 WATER RESOURCES

The major water resource in the catchment is the chalk aquifer which is principally used for Industrial and Public Water Supplies. Demands for water in the Catchment are met from the chalk and from two surface water sources outside the catchment (the Louth Canal via Covenham Reservoir and River Ancholme via Cadney Reservoir).

The chalk aquifer is heavily abstracted and there are concerns, particularly in dry periods, over the impacts of groundwater abstraction on fishery and conservation interests in several spring-fed streams which drain from the Wolds across the coastal strip. These concerns, along with those regarding the risk of saline intrusion to industrial and public supply sources in the Grimsby area, raises an important issue regarding the current balance between the needs of water abstractors and those of the water environment and resource protection.

Whilst water resources are adequate to meet future demands, the promotion of demand management measures may reduce pressures on available resources.

4.6 RECREATION

The principal focus for waterbased recreation within the catchment is associated with the Estuary fringe. The Humber Bank Path largely follows the fringe and a number of lakes and marinas behind the tidal defences provide facilities for most forms of waterbased recreation.

Inland, there are riverbank footpaths and the Viking Way, which starts at Barton Haven and skirts along the western edge of the catchment. There are a number of recreational fishing lakes and the Freshney Parkway conservation area extends along the River Freshney from Grimsby.

The Estuary offers a number of opportunities to further develop recreational potential. Periodic low river flows and levels are a constraint on some angling and amenity interests in dry periods.



5. THE RELATIONSHIP BETWEEN LAND USE AND THE WATER ENVIRONMENT

The catchment is situated within the administrative boundaries of Humberside and Lincolnshire County Councils; Cleethorpes, Great Grimsby, and Gt. Grimsby Borough Councils; and East and West Lindsey District Councils.

Whilst 83% of the land within the catchment is currently used for agricultural purposes - much of it being high quality and of significance in a national context - perhaps the catchment's most striking feature is the intensive industrial development it has undergone over the past 25 years, particularly the "Humber Bank Industries" and the expansion of ports and wharves between Killingholme and Immingham. For the future, an area of 1400 hectares has been identified in the Structure Plan for this catchment for "Estuary Area Development".

Change in land use on this scale will have a significant impact upon the water environment. Although the NRA is able to influence some of the factors affecting the water environment, particularly in relation to the river corridor, it has very little control over the mechanisms which determine land use change on a catchment wide basis. This is largely the responsibility of Local Planning Authorities through the implementation of the Town and Country Planning Acts.

The policies in statutory development plans are important in this regard in that they set out the framework for land use change, and provide the key reference in determining development applications;

the NRA works closely with Planning Authorities and encourages the inclusion of policies which reflect its concerns and responsibilities.

As guidance for Local Authorities, the NRA has prepared a set of statements relating to the broad headings of water quality and water resources, flood defence, fisheries, conservation, recreation and navigation in the river corridor, and mineral workings and waste disposal. These statements are summarised in the NRA's "Guidance Notes for Local Planning Authorities on the Methods of Protecting the Water Environment through Development Plans".

Further detailed guidance on areas of concern to the NRA are provided in for example, DoE Circular 30/92 "Development and Flood Risk" where a Memorandum of Understanding has been signed by the Local Authorities' representative bodies and the NRA with regard to the scope and timing of providing floodplain maps. Without adequate consultation, there is an increased risk of inappropriate developments in the floodplain and similar areas of constraint. This circular and other Government policy guidance stresses the importance that Local Planning Authorities should attach to the NRA's advice.

At the strategic level, several Structure Plans and Unitary Development Plans are all moving towards adoption, and the NRA has suggested the inclusion of policies to protect and improve the water environment.



*Immingham
Docks*

6. ACTIVITY PLANS

This section sets out the issues identified during the development of this Plan and for each specifies:

- the action the NRA proposes
- those organisations with a responsibility towards resolving the issue
- the timescale of proposed actions
- the costs involved (where possible)

It has to be recognised that for some issues identified, the solutions will be achieved within the timescale of this Plan (5 years), and for others it will take considerably longer. Proposed actions may be constrained by changing priorities of both the NRA and “interested parties”, and by the availability of resources. All schemes promoted by the NRA are subject to strict cost benefit analysis before they are approved, and in seeking financial commitments from other organisations, the NRA will seek to balance the interests of different water users. Given these constraints, the NRA expects the timescales denoted in the Plan will be accommodated.

Readers may be aware of an apparent overlap between this Plan and the Humber Estuary Catchment Management Plan, which was launched in May 1994. Where issues are common to both Plans (Issue Nos. 13, 14, 18, 19, 20, 21, 29, 30, 32, 33) the actions proposed have been replicated in this Plan and will be managed as one.

KEY TO ABBREVIATIONS USED IN THE TABLES

ABP Associated British Ports	EC European Community	LPA Local Planning Authority
AWS Anglian Water Services	EH English Heritage	MAFF Ministry of Agriculture, Fisheries and Food
BASC British Association for Shooting and Conservation	EN English Nature	NFU National Farmers' Union
BC Borough Council	HEMS Humber Estuary Management Strategy	NRA National Rivers Authority
BCU British Canoe Union	HMIP Her Majesty's Inspectorate of Pollution	R&D Research and Development
CC Crown Commissioners	HSE Health and Safety Executive	RSPB Royal Society for the Protection of Birds
CoCo Countryside Commission	IDB Internal Drainage Board	SPA Special Protection Area
	LA Local Authority	SSSI Site of Special Scientific Interest

ISSUE 1

LICENSED AND ACTUAL GROUNDWATER ABSTRACTION FROM THE CHALK AQUIFER EXCEEDS AVAILABLE RESOURCES.

ISSUE 1 - Sub Issue 1

GROUNDWATER ABSTRACTION POSES A SIGNIFICANT RISK TO GROUNDWATER QUALITY DUE TO SALINE INTRUSION IN THE GRIMSBY AREA.

BACKGROUND

Water demands for Public Water Supply and Industry in the catchment are met partly from abstraction from the chalk and partly from two major surface water resource developments which import water into the catchment. The chalk aquifer is heavily abstracted and in all but above average recharge years its resources are insufficient to enable all licence holders to abstract water to their full entitlement without causing saline intrusion. It is the connection between the chalk aquifer and the Humber Estuary in the Grimsby area that results in saline water being drawn into the aquifer. A number of industrial water sources have been affected by saline water contamination and there is a real risk of public supply and other sources becoming contaminated if abstraction exceeds available resources for extended periods.

OBJECTIVE	ACTION	RESPONSIBILITY		95/96	96/97	97/98	98/99	99/00	FUTURE	COST £
		LEAD	OTHER							
To ensure that aquifer abstraction is sustainable and consistent with protection of the aquifer from saline intrusion.	Reduce abstraction through legal management Agreement with AWS.									
	NRA and AWS have agreed to enter into a 5 year Agreement* under Section 20 of the Water Resources Act 1991 to protect the aquifer.	NRA	AWS	■						c.3k pa.
	Review arrangements for ongoing aquifer management.	NRA	AWS					■		3k.
	Promote demand management measures.	NRA	All water users.	■	■	■	■	■	■	Depends on action required

* The 5 year Agreement sets out the requirements to manage abstraction to sustainable quantities that are consistent with managing aquifer saline intrusion. Anglian Water Services are the major abstractor in the catchment and during times when abstraction is reduced from the chalk aquifer, public water supplies will be maintained using water imported from existing surface water resource developments in adjacent catchments.

Costs are estimated and refer to internal NRA staff costs only. The operational costs of managing abstraction are difficult to assess and will be largely affected by recharge conditions.

ISSUE 1 - Sub Issue 2

THERE IS CONCERN THAT GROUNDWATER ABSTRACTION HAS AN UNACCEPTABLE EFFECT ON THE WATER ENVIRONMENT PARTICULARLY THE LACEBY BECK/RIVER FRESHNEY AND BARROW/BARTON BLOW-WELLS SSSI'S. THERE IS INSUFFICIENT INFORMATION AVAILABLE ON THE ENVIRONMENTAL IMPACT OF GROUNDWATER ABSTRACTION.

BACKGROUND

The chalk aquifer in the catchment is heavily abstracted. In dry years there is no water available to meet springflows under current levels of abstraction. If abstraction increases, the frequency of impact on springflows would increase. There is therefore serious concern that the resource balance, in years when recharge is average and below, may have an unacceptable affect on fishery and conservation interests which rely upon chalk springflows. The long term ecological implications of the resource situation is unclear, partly due to a lack of ecological data on impacts.

OBJECTIVE	ACTION	RESPONSIBILITY		95/96	96/97	97/98	98/99	99/00	FUTURE	COST £
		LEAD	OTHER							
To collect environmental information, assess the impact of groundwater abstraction upon the environment and implement remedial actions required to balance abstraction and environmental needs.	To carry out environmental surveys to identify water dependent features and understand the impact of abstraction upon the local environment.	NRA AWS	English Nature, Conservtn interests	■	■	■	■	■		c. 50k
	To produce a Plan which identifies what needs to be done in those areas where the environmental impact of abstraction is unacceptable.	NRA AWS				■				c. 3k
	Commence implementation of plan.	NRA AWS						■	■	(1)

⁽¹⁾ The costs of the plan implementation cannot be assessed at this stage.

As part of an agreement between NRA and AWS, AWS will carry out environmental surveys to identify water dependent features and assess the impact of groundwater abstraction upon them. AWS, in consultation with the NRA, will produce a plan to make any environmental improvements necessary.

ISSUE 2

ACHIEVING THE RIGHT BALANCE BETWEEN ABSTRACTION AND THE NEEDS OF THE ENVIRONMENT IS LIMITED BY A LACK OF A CONSISTENT AND OBJECTIVE METHOD TO SET AND IMPLEMENT RIVER FLOW OBJECTIVES TO TAKE ACCOUNT OF ALL WATER USES.

BACKGROUND

The groundwater resources of the catchment are fully committed and there are concerns over the balance between the needs of water abstractors and those of the water environment. There is a lack of understanding of the relationships between riverflow, the ecological health of a river and its physical characteristics. River Flow Objectives need to be identified which reflect these relationships and can effect an acceptable balance between uses.

OBJECTIVE	ACTION	RESPONSIBILITY		95/96	96/97	97/98	98/99	99/00	FUTURE	COST £
		LEAD	OTHER							
To develop methods to set and implement River Flow Objectives to achieve the right balance between abstraction and the needs of the environment.	R & D projects to develop methods for setting River Flow Objectives.	NRA		■	■	■				c. 30k
	Implementation.	NRA					■	■	■	TBE

TBE - To be evaluated

The NRA is promoting a number of National R & D contracts to further understanding and develop methodologies for the setting of River Flow Objectives. National R & D may lead initially to methodologies for large rivers, eg River Trent. Their application for small rivers/streams will follow.

Given the nature of research, the timescales and costs for action are indicative only.

DEMAND FOR WATER IN THE CATCHMENT EXCEEDS ITS AVAILABLE RESOURCES.

BACKGROUND

The major water resource in the catchment is the chalk aquifer, which is developed for public water supply, industrial and agricultural uses. Demands for water are met from the chalk aquifer and also from water imported to the catchment by Anglian Water Services Ltd from two surface water sources, ie. Louth Canal (via Covenham Reservoir) and the River Ancholme (via Cadney Reservoir). Industrial demand in the catchment is substantial both from direct abstraction and from public supplies. Whilst the forecast increase in demand over the next 20 years may be minimal the groundwater resources in the catchment are currently over-committed.

OBJECTIVE	ACTION	RESPONSIBILITY		95/96	96/97	97/98	98/99	99/00	FUTURE	COST £
		LEAD	OTHER							
Ensure demands for water in the catchment are met in a sustainable way and ensure availability of water from outside the catchment to meet demand.	Promote appropriate demand management measures.	NRA	All water users.	■	■	■	■	■	■	(1)
	Public water and Industrial Supplies: Future increases in demand to be met from sources outside the catchment, principally AWS' abstraction from the River Ancholme at Cadney, which is supported by the NRA's Trent Witham Ancholme Water Transfer Scheme.	AWS, Industry		■	■	■	■	■	■	(1)
	Agriculture and Spray Irrigation: Future increases in demand to be met from storage of winter water for summer use.	Farmers		■	■	■	■	■	■	(1)

(1) Costs are difficult to quantify in the context of this issue.

ISSUE 4

THE NEW CUT DRAIN FAILS ITS PROPOSED WATER QUALITY OBJECTIVE TARGET OF RIVERS ECOSYSTEM CLASS 4.

BACKGROUND

Until recently the New Cut Drain in Grimsby between the railway bridge and its outfall received trade effluent discharges which caused failure of its water quality target class. A new foul sewer has now been provided to convey trade effluent away from the area. Concern has been registered that some dischargers intend to continue to discharge to the New Cut Drain rather than connect up to the foul sewer.

OBJECTIVE	ACTION	RESPONSIBILITY		95/96	96/97	97/98	98/99	99/00	FUTURE	COST £
		LEAD	OTHER							
To ensure that the New Cut drain complies with its water quality target class.	All discharges which compromise compliance with the target class must be improved or diverted to the new foul sewer.	Industry	NRA, AWS	■	■	■	■			Depends on actions required.

ISSUE 5

EFFLUENT DISCHARGES INTO THE NORTH AND SOUTH KILLINGHOLME MAIN DRAINS INHIBIT THE DIVERSITY OF AQUATIC LIFE.

BACKGROUND

Biological monitoring of the North and South Killingholme Main Drains indicates both watercourses have poor biological quality due to effluent discharge from adjacent oil refineries.

Considerable investment is being undertaken by the dischargers to improve the quality of their discharges. Some improvement in the North Killingholme Drain has been noted in more recent analysis.

OBJECTIVE	ACTION	RESPONSIBILITY		95/96	96/97	97/98	98/99	99/00	FUTURE	COST £
		LEAD	OTHER							
To improve invertebrate diversity and population.	Dischargers to improve their effluent quality.	Discharger		■	■	■	■			36m

ISSUE 6

A SIGNIFICANT NUMBER OF POLLUTION INCIDENTS ORIGINATE FROM INDUSTRIAL ESTATES IN THE CATCHMENT.

BACKGROUND

Concentrated industrial development in parts of the catchment poses an increased risk of pollution to the water environment. In a number of areas, including Killingholme Airfield and industrial estates at Elsham Wold, Wilton Road (Humberston), Manby Road (Immingham) and Kiln Lane (Stallingborough) there have been significant pollution incidents. The NRA wish to prevent pollution by encouraging owners, operators and developers to build pollution prevention measures into their infrastructure and operating practices.

For those pollutions which do occur, the NRA pursues a policy of seeking to ensure that the dischargers pay the costs of the consequences of their discharge. The NRA will prosecute polluters where it is deemed appropriate.

OBJECTIVE	ACTION	RESPONSIBILITY		95/96	96/97	97/98	98/99	99/00	FUTURE	COST £
		LEAD	OTHER							
To protect the environment by reducing the number of pollution incidents.	NRA to instigate pollution prevention initiatives.	NRA	Developers, Industry, Farmers	■	■	■	■	■		(1)
	Planning Authority to promote pollution prevention via the planning process.	LPAs		■	■	■	■	■		(1)

⁽¹⁾ Costs will depend on actions required. Costs may be offset against potential pollution clean up costs.

ISSUE 7

THE LACEBY BECK/RIVER FRESHNEY FAILS TO MEET THE EC FISHERIES DIRECTIVE STANDARD FOR AMMONIA IN YEARS WHEN RIVER FLOW IS LOW.

BACKGROUND

Surface water quality in the catchment is generally fair. However, during periods of low river flows the water quality in the lower stretches of some rivers is poor due to saline water intrusion, eutrophication, elevated water temperatures and low dissolved oxygen. The Laceby Beck/River Freshney has had works carried out to inhibit saline intrusion (by construction of a tilting weir). Water quality in the river downstream of Laceby Sewage Treatment Works suffers when ammonia concentrations are elevated during periods of low river flows and this inhibits fishery development.

OBJECTIVE	ACTION	RESPONSIBILITY		95/96	96/97	97/98	98/99	99/00	FUTURE	COST £
		LEAD	OTHER							
Improve water quality to comply with the EC Fisheries Directive Standard.	Evaluate options for required improvements and implement appropriate option.	AWS	NRA	■	■	■				TBE

TBE = to be evaluated

ISSUE 8

SURFACE WATERS IN DOCK AND MARINA AREAS ARE BEING POLLUTED BY OILY BILGE WATERS.

BACKGROUND

There are a number of dock and marina areas associated with commercial and recreational activity on the Humber. Water quality in these areas is periodically adversely affected by vessels pumping out oil contaminated bilge water.

OBJECTIVE	ACTION	RESPONSIBILITY		95/96	96/97	97/98	98/99	99/00	FUTURE	COST £
		LEAD	OTHER							
To reduce the incidence of pollution caused by discharging oily bilge water.	NRA to seek the agreement of owners to reduce incidence of discharges.	NRA			■					(1)
	To provide facilities for safe disposal of oily bilge water.	Port Authority/ Marina owners	NRA				■	■	■	TBE
	Carry out pro-active pollution prevention campaigns	NRA		■	■	■	■	■	■	(1)

TBE - To be evaluated

(1) - Costs dependent on actions required

REDUCE THE DISCHARGE OF "DANGEROUS SUBSTANCES" TO THE NORTH SEA.

(THIS ISSUE IS ALSO IDENTIFIED AS ISSUE 6 IN THE HUMBER ESTUARY CATCHMENT MANAGEMENT PLAN ACTION PLAN)

BACKGROUND

The Estuary currently complies with all of its Environmental Quality Standards. Nevertheless, since Dangerous Substances are those which are the most toxic to, and persistent in, the environment, "the precautionary principle" suggests that both regulators and industry must work together to reduce the concentrations of these substances in the environment to the lowest levels practicable.

As well as the EC Dangerous Substances Directive which controls both List I and List II Substances, in 1989 following the Second North Sea Conference, the Government issued its "Red List" of Dangerous Substances and proposed integration of the United Kingdom's Environmental Quality Objectives (EQO) approach to discharge control with the uniform emission standards approach which is adopted in most other EC Countries.

The UK "Red List" has now been largely overtaken by the controls introduced under Part 1 of the Environmental Protection Act 1990. The BATNEEC (Best Available Techniques Not Entailing Excessive Costs) controls were introduced as part of a system of integrated pollution control (IPC) designed to develop an approach to pollution control which considers discharges to all media - air, water and land - in the context of the effect on the environment as a whole; this is known as the "best practical environmental option" (BPEO). Under the EPA 1990, Her Majesty's Inspectorate of Pollution (HMIP) are the Authority responsible for enforcing IPC; however, the NRA is a statutory consultee with respect to all prescribed processes which involve releases into controlled waters, including the Humber Estuary.

Following the Third North Sea Conference in 1990, a further list of some 36 substances including those on the "Red List" were designated as priority hazardous substances. The conference included an agreement to reduce by 50% or more the discharge of these substances to the North Sea via rivers and estuaries between the years of 1985 and 1995. For dioxins, lead, cadmium and mercury, reductions of the order of 70% were agreed where available by BATNEEC. The Third North Sea Conference also agreed common action to reduce specific groups of substances; thus specific pesticides and polychlorinated biphenyl must be strictly controlled or phased out altogether.

OBJECTIVE	ACTION	RESPONSIBILITY		95/96	96/97	97/98	98/99	99/00	FUTURE	COST £
		LEAD	OTHER							
Reduce the discharge of dangerous substances to the water environment.	Implement Integrated Pollution Control by authorising processes prescribed under the Environmental Protection Act 1990.	HMIP, Industry	NRA	■	■	■	■	■	■	100M
	Encourage Industry to adopt Waste Minimisation Principles.	NRA, Industry		■	■	■	■	■	■	

ISSUE 10

CLEETHORPES BATHING WATER FAILS THE EC BATHING WATER DIRECTIVE.

(THIS ISSUE IS ALSO IDENTIFIED AS ISSUE 5 IN THE HUMBER ESTUARY CATCHMENT MANAGEMENT PLAN ACTION PLAN.)

BACKGROUND

The EC Bathing Water Directive (76/160/EEC) is relevant to standards in the Humber Estuary at Cleethorpes. This Directive lays down microbiological standards for bathing waters, principally in terms of total and faecal coliform levels. The waters at Cleethorpes do not comply with the mandatory standards but full compliance is expected to be achieved in the 1995 bathing season ie. May to September inclusive, as a result of major improvements to the sewerage system and the provision of sewage treatment, carried out by Anglian Water Services (AWS).

OBJECTIVE	ACTION	RESPONSIBILITY		95/96	96/97	97/98	98/99	99/00	FUTURE	COST £
		LEAD	OTHER							
Improve bathing water quality at Cleethorpes.	Improve the sewerage system and provide a sewage treatment works for Cleethorpes.	AWS	NRA	■						50m
	Continue monitoring and publish results.	NRA	Local Authority	■	■	■	■	■	■	2k pa

ISSUE 11

LITTER ACCUMULATION IN MANY WATERCOURSES OCCURS CLOSE TO URBAN DEVELOPMENT.

BACKGROUND

In urban areas such as Grimsby and Immingham the general accumulation and dumping of litter along watercourses is visually and environmentally unacceptable. There is an added risk of flooding where such debris causes blockages to culverts and weed screens.

OBJECTIVE	ACTION	RESPONSIBILITY		95/96	96/97	97/98	98/99	99/00	FUTURE	COST £
		LEAD	OTHER							
To reduce the accumulation of litter in watercourses.	Carry out collaborative litter removal programs.	Local Councils	Local Groups, NRA, Landowners	■	■	■	■	■		(1)
	Increase public awareness and disposal facilities.	Local Councils	Local Groups, NRA	■	■	■	■	■		(1)

(1) Costs depend on action required.

Responsibility for addressing the litter problem is not clear. However, progress in addressing the issue is being made by some local councils. The NRA recognises the need for a collaborative approach to resolving such local problems and will continue to work with local councils.

NITRATE CONCENTRATIONS IN GROUND AND SURFACE WATERS EXCEED, OR ARE EXPECTED TO EXCEED 50mg/l.

BACKGROUND

In the west of the Catchment where the chalk aquifer outcrops, groundwater is highly vulnerable to diffuse sources of pollution. Agricultural practices within this part of the Catchment, ie. the use of fertilisers, has led to the presence of high concentrations of nitrate in groundwaters.

The EC Nitrate Directive requires control measures to be implemented where Nitrate Concentrations exceed, or are at risk of exceeding, 50mg/l. A number of zones which are identified in the Consultation Document have been designated as Nitrate Vulnerable Zones and Nitrate Sensitive Areas by the Ministry of Agriculture, Fisheries and Food. Through these designations the Ministry aim to influence farming practices to improve groundwater quality.

OBJECTIVE	ACTION	RESPONSIBILITY		95/96	96/97	97/98	98/99	99/00	FUTURE	COST £
		LEAD	OTHER							
To reduce the concentrations of nitrate in groundwater used for public water supply.	Nitrate applications to farmland to be controlled in accordance with MAFF requirements.	MAFF	NFU, Farmers, NRA	■	■	■	■	■		(1)

⁽¹⁾ The costs and benefits of changing farming practices may only be determined after operational experience of the various schemes designed to limit nitrate application. Compensation payments are available under the Nitrate Sensitive Area scheme.

ISSUE 13

DEVELOPMENT ON AREAS OF CONTAMINATED LAND HAS THE POTENTIAL TO POLLUTE, BUT PROVIDES OPPORTUNITY TO CLEAN UP EXISTING PROBLEMS.

(THIS ISSUE IS ALSO IDENTIFIED AS ISSUE 26 IN THE HUMBER ESTUARY CATCHMENT MANAGEMENT PLAN ACTION PLAN)

BACKGROUND

The NRA favours the beneficial re-use of contaminated land in preference to the development of greenfield sites, provided that pollution is not caused.

Many sites have been cleaned up with the help of derelict land grants, but serious problems are experienced with "orphan" sites where the owner is not known, or the resale value of the cleaned-up site is less than probable remediation costs.

The Environment Bill now before parliament contains new proposals for the management and clean-up of contaminated land and closed landfill sites. The NRA is supporting proposals for designation of high risk sites and remediation procedures. Remediation may well be related to the proposed new use, on a "fitness for purpose" basis.

OBJECTIVE	ACTION	RESPONSIBILITY		95/96	96/97	97/98	98/99	99/00	FUTURE	COST £
		LEAD	OTHER							
Prevent the pollution of surface waters and groundwater from contaminated land and closed landfill sites, whilst encouraging the re-use of such land.	Negotiate with and persuade LPA's and developers to ensure pollutants are removed from site, neutralised or effectively contained.	NRA, LPA's	Developers	■	■	■	■	■	■	(1)
	Continue to lobby Government for effective legal controls and arrangements.	NRA, Local Authorities		■	■	■	■	■	■	(1)

⁽¹⁾ Costs are internal costs for relevant organisations; remediation costs borne by developers may reach £ millions, but are not quoted here, since they are either unknown or commercially confidential.

DEVELOPMENT INVOLVING THE STORAGE AND TRANSPORTATION OF HAZARDOUS MATERIALS WITHIN THE CATCHMENT MAY CREATE A POLLUTION AND HEALTH AND SAFETY RISK.

(THIS ISSUE IS ALSO IDENTIFIED AS ISSUE 27 IN THE HUMBER ESTUARY CATCHMENT MANAGEMENT PLAN ACTION PLAN)

BACKGROUND

The risk of pollution and health and safety problems are minimised by the appropriate location of developments and careful attention to detailed design and construction. At present legislation is enforced by several different regulatory authorities including NRA, HSE and LPA's. Co-ordination of regulatory requirements is necessary so as to ensure comprehensive pollution prevention measures are adopted in a consistent manner.

OBJECTIVE	ACTION	RESPONSIBILITY		95/96	96/97	97/98	98/99	99/00	FUTURE	COST £
		LEAD	OTHER							
Prevent pollution of surface waters and groundwater by hazardous materials.	Ensure that high risk sites are located in areas where pollutants can be easily excluded from surface waters and groundwater.	NRA, LPA's, Developer/ Site owner and operator		■	■	■	■	■	■	(1)
	Ensure design and construction minimises risk and that appropriate pollution prevention and control equipment are in place and tested regularly.	NRA, LPA's Site operator, Developer		■	■	■	■	■	■	(1)
	Ensure adequate emergency procedures are in place and publicised and tested.	NRA, Em Services, LA's (Em Planning), Site operator		■	■	■	■	■	■	(1)
	Identify preferred routes and modes of transport and liaise with Highway Authority.	NRA, Highway Authority, British Rail		■	■	■	■	■		
Prevent risk to health and safety of employees, local residents and the general public.	Actions as above for pollution prevention.	NRA, Em Services, LPA's, LA's (Em Planning), Site operator/ Developer		■	■	■	■	■	■	(1)

(1) No costs are ascribed to preventative measures within good design and construction practice. NRA, LPA, LA and Emergency Services costs are internal and difficult to allocate to these actions. Developers and site owners costs are not known.

LOCALLY INADEQUATE RIPARIAN DRAINAGE SYSTEMS RESULT IN FLOODING PROBLEMS IN A NUMBER OF SMALL VILLAGES.

BACKGROUND

The NRA uses its powers to alleviate flood risks for designated main river stretches only. There are locations within the catchment, such as Goxhill, Habrough, and Barrow, which suffer from, or are at risk of, flooding from non-main rivers. This risk arises because drainage systems have been inadequately maintained or have been the subject of indiscriminate and uncontrolled culverting. In these areas, the responsibility for maintenance rests with riparian owners - County, District and Borough Councils have permissive powers to alleviate flood risks on non-main rivers outside Internal Drainage Board areas.

OBJECTIVE	ACTION	RESPONSIBILITY		95/96	96/97	97/98	98/99	99/00	FUTURE	COST £
		LEAD	OTHER							
To reduce the incidence of local flooding from riparian's drainage systems and encourage a greater understanding of responsibilities for non main river watercourses.	Agree consistent approach and actions with bodies having responsibilities and power under the Land Drainage Act 1991.	NRA	District & County Councils, IDBs, Riparian Owners	■	■	■	■	■		iii
	Produce information brochures for public education.	NRA	District & County Councils, IDBs, Riparian Owners	■	■	■	■	■		iii

iii - Costs depend on actions required to resolve individual problems.

The NRA recognises the need for a collaborative approach to resolving non-main river problems and will initiate discussions with others to seek solutions.

ISSUE 16

THE LEVEL OF FLOOD PROTECTION TO PROPERTIES ON THE RIVER FRESHNEY IS INADEQUATE.

BACKGROUND

The general drainage system in the catchment consists of a number of natural watercourses (highland carriers) carrying drainage water from the Wolds across the low lying coastal plain before discharging in the Humber Estuary. Drainage within the coastal plain is provided by a network of largely artificial drainage channels administered and maintained by Internal Drainage Boards. Current standards of flood protection are provided in accordance with guidelines set by MAFF and which relate to land use to specified levels of protection. The current standard of fluvial flood defence in the catchment is adequate for the land use protected with the exception of the River Freshney in Grimsby where the protection provided falls below the indicative 1 in 20 standard.

OBJECTIVE	ACTION	RESPONSIBILITY		95/96	96/97	97/98	98/99	99/00	FUTURE	COST £
		LEAD	OTHER							
Provide appropriate standard of flood defence.	Identify and develop appropriate options to meet the target standard for flood protection and implements.	NRA	EN, Grimsby BC, MAFF			■	■			500k

ISSUE 17

THE EFFECTIVENESS OF FLUVIAL FLOOD FORECASTING AND CONTROL, FOR SOME FLOOD RISK AREAS IN THE CATCHMENT, IS BELOW THE TARGET STANDARD.

BACKGROUND

The NRA operates a flood warning service whereby the police, other organisations, such as the media and local councils, and the public are advised in advance of areas likely to be affected by flooding. The NRA aims to pass warnings to the police to give four hours advance warning of flooding to property. This requires real time information on river flows and levels to be collected by telemetry and used to make forecasts which may initiate warnings. The effectiveness of fluvial flood warning is below the target standard in some areas, such as Barrow and East Halton due to a lack of monitoring sites and telemetry.

OBJECTIVE	ACTION	RESPONSIBILITY		95/96	96/97	97/98	98/99	99/00	FUTURE	COST £
		LEAD	OTHER							
To improve effectiveness of flood warnings for areas at risk of flooding to meet target of giving four hours warning.	Extend existing river level, flow instrumentation, and telemetry system.	NRA	MAFF					■		200k

DIFFERENT STANDARDS OF TIDAL FLOOD PROTECTION ARE ASCRIBED TO ADJACENT LENGTHS OF FLOOD DEFENCES BECAUSE THE RESPONSIBILITY FOR FLOOD DEFENCES RESTS WITH A NUMBER OF ORGANISATIONS.

(THIS ISSUE IS ALSO IDENTIFIED AS ISSUE 2 IN THE HUMBER ESTUARY CATCHMENT MANAGEMENT PLAN ACTION PLAN.)

BACKGROUND

Responsibility for providing and maintaining flood defences on the Estuary rests with a variety of individuals and organisations. These include NRA, which has permissive powers to carry out works, Crown Commissioners, Local Authorities, Associated British Ports and riparian land owners. This complexity of ownership and responsibility means that no single body has direct control over the entire flood defences of the Estuary. There is therefore a risk of inconsistent and inadequate standards of protection being provided.

OBJECTIVE	ACTION	RESPONSIBILITY		95/96	96/97	97/98	98/99	99/00	FUTURE	COST £
		LEAD	OTHER							
Ensure consistency of standards in the provision of estuary flood defences. Works to be developed through the Humber Estuary Tidal Defence Strategy and Sector Strategies.	Encourage joint commitment from all parties responsible for providing and maintaining estuary flood defences by initiating a pro-active approach to liaison.	NRA	Local Authorities, ABP, Riparian Owners	■	■	■	■	■	■	15k pa ⁽¹⁾
	This is to be achieved through focusing terms of reference of existing groups on a timescale consistent with the production of the Humber Estuary Management Strategy.									
	NRA will act to provide appropriate standards subject to justification, by use of permissive powers.	NRA	MAFF	■	■	■	■	■	■	5k pa ⁽²⁾

⁽¹⁾ NRA Admin Costs

⁽²⁾ NRA Costs in developing and maintaining strategies.

- A) THE STRUCTURAL INTEGRITY OF THE FLOOD DEFENCES IS DIMINISHING AS THEY REACH THE END OF THEIR USEFUL LIFE.
- B) EXISTING FLOOD DEFENCE STANDARDS ARE BEING REDUCED BY RISING SEA LEVELS INCREASING THE FREQUENCY AT WHICH THEY WILL BE OVERTOPPED AND BREACHED.
- C) FLOOD DEFENCES ARE THREATENED BY INCREASED WAVE ATTACK BROUGHT ABOUT BY THE EROSION OF THE FORESHORE.

(THIS ISSUE IS A COMBINED REVISION OF ISSUES 19 AND 20 IN THE CONSULTATION DOCUMENT, IT IS ALSO IDENTIFIED AS ISSUES 9 AND 10 IN THE HUMBER ESTUARY CATCHMENT MANAGEMENT PLAN ACTION PLAN.)

BACKGROUND

Most of the defences were built following the 1953 flood event. They are now approaching the end of their effective life. The rate of damage and deterioration is now accelerating.

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 combination is gradually lowering the existing standard of defence and increasing flood risk.

As water levels rise this leads to a threat to the inter-tidal mud flat and marsh areas fronting the defences. This threat results from both the simple drowning of the inter-tidal areas due to sea level rise together with lowering of the foreshore by erosion due to increased wave energy. The combined effect will be a loss of inter-tidal area. The loss of this area will result in increased wave height and wave energy acting on the defences leading to accelerated wear and tear and increasing the risk of overtopping and failure.

The NRA has developed the Humber Estuary Tidal Defence Strategy to address these issues. The strategy defines those areas where on line defences are essential to protect important urban, industrial, and environmental assets, and areas where there is potential for defence realignment. Implementation will be via individual sector strategies, which will involve full consultation with interested parties. The EC Habitats Directive will have implications for flood defence works in certain statutory conservation areas.

The NRA does not have a duty to maintain and build flood defences, but exercises its permissive powers for the good of the community.

OBJECTIVE	ACTION	RESPONSIBILITY		95/96	96/97	97/98	98/99	99/00	FUTURE	COST £
		LEAD	OTHER							
Provide appropriate long term effective and sustainable tidal defences for the Estuary.	Implement strategy and update as required.	NRA	MAFF, EH, EN, CC	■	■	■	■	■		(1)
	Develop geomorphological tool.	NRA				Included in Issue 20				
	Prepare Sector Strategies.	NRA	EN, CC	■	■	■	■	■		(1)
Identify works required to high risk flood areas.	Immingham, East Halton, New Holland.	NRA	MAFF, EN	■	■					2.3m (1)
	Pyewipe, Stallingborough, Killingholme, Goxhill, Chowderness.	NRA	MAFF, EN			■	■	■		1.7m (1)
	Maintain defences where appropriate.	NRA	EN	■	■	■	■	■		

(1) - The costs shown are drawn from Flood Defence Long Term Plan. The locations have been identified as significant flood risk areas relating to the level or condition of the existing defences. The inclusion of these costs does not indicate a commitment to carry out works. Identification of urgent works and development of long term flood defence needs will be achieved through Estuary-wide and Sector Strategies for the tidal defences. Evaluation of defence options through re-alignment and improvement on-line will be undertaken.

INSUFFICIENT INFORMATION EXISTS ON THE RELATIONSHIP BETWEEN SEDIMENTARY PROCESSES, FRESHWATER FLOW, RISING SEA LEVELS AND ESTUARY BOUNDARIES.

(THIS ISSUE IS ALSO IDENTIFIED AS ISSUES 11 AND 12 IN THE HUMBER ESTUARY CATCHMENT MANAGEMENT PLAN ACTION PLAN.)

BACKGROUND

Studies suggest that natural and other processes going on within the Estuary are causing a loss of sediment. Coastal erosion on the Holderness coast is believed to be one of a number of sources of supply of sediment to the Estuary. Surveys indicate that the inter-tidal areas in parts of the Estuary have diminished. Records over the past 60 years show that sea levels in the Estuary have risen by some 215 millimetres.

A net loss of sediment from the Estuary would lead to a reduction of inter-tidal areas, lessening the environmental value of the area. Also, increased wave action in flood defences would reduce their effectiveness.

The overall effects of sedimentary processes, freshwater flows, rising sea levels, dredging activities and the constraining of the Estuary and coastal boundaries needs to be determined.

OBJECTIVE	ACTION	RESPONSIBILITY		95/96	96/97	97/98	98/99	99/00	FUTURE	COST £
		LEAD	OTHER							
Increase knowledge of the problem and the processes which characterise this area to enable improvements in the decision making process.	Initiate a geomorphological study of the Estuary;	NRA								
	Stage I: Feasibility			■						40k
	Stage II: Prep Studies				■					200k
	Stage III: Development of geomorphological tools.					■	■	■	■	1-3m
Provide consistency between strategies within the Estuary and adjacent coast to ensure a holistic approach.	Develop and maintain a robust consultation process to enable an integrated approach between the Humber Estuary Tidal Defence Strategy, Shoreline Management Plan and Humber Estuary Management Strategy.	NRA, Holderness Borough Council, HEMS	MAFF, Local Authorities	■	■	■	■	■	■	10k pa

DEVELOPMENT AND UPGRADING OF LAND BEHIND DEFENCES MAY BE INCONSISTENT WITH THE CURRENT LEVEL OF PROTECTION AFFORDED.

(THIS ISSUE IS ALSO IDENTIFIED AS ISSUE 13 IN THE HUMBER ESTUARY CATCHMENT MANAGEMENT PLAN ACTION PLAN.)

BACKGROUND

As flood defences have been constructed along the Estuary, industrial and residential development has expanded in areas which were previously floodplain. The standards of defence have not necessarily been commensurate with the nature or degree of this development.

Further pressure to extend development in the natural floodplain has increased as the availability of other sources of land for development has reduced.

OBJECTIVE	ACTION	RESPONSIBILITY		95/96	96/97	97/98	98/99	99/00	FUTURE	COST £
		LEAD	OTHER							
Discourage inappropriate development in high risk areas.	Liaise with Planning Authorities to ensure there is consistency between Development Plans and Catchment Management Plans.	NRA, LPA's		■	■	■	■	■	■	85k pa ⁽¹⁾
	Take appropriate action through development control procedures.	NRA, LPA's	Developers	■	■	■	■	■	■	inc. in above
Ensure standards of defence are consistent with new development needs in areas defined as appropriate by Development Plans.	Consider new developments within the framework of the Humber Estuary Tidal Defence Strategy and Sector Strategies seeking contributions from developers as necessary.	NRA, Developers,	Local Authorities	■	■	■	■	■	■	Indeterminate
	Require developers to provide appropriate standard of defence where NRA have no schemes planned.	Developers	NRA, Local Authorities	■	■	■	■	■	■	TBE

⁽¹⁾ - NRA development control costs.

TBE - To Be Evaluated.

FISH BIOMASS AND SPECIES RICHNESS FALL BELOW TARGET STANDARDS IN THE LACEBY BECK AND RIVER FRESHNEY FOLLOWING PERIODS OF LOW FLOWS AND RESULTING POOR WATER QUALITY.

BACKGROUND

The Laceby Beck and River Freshney both sustain a poor fish biomass and low species richness (diversity). The prolonged drought was particularly damaging to the fishery in this river system and the NRA had to undertake a major fish rescue from the Freshney at the height of the dry period. There is a need to link the fisheries data with other environmental surveys, understand the impact of abstraction on the environment, and subsequently identify, evaluate and implement the required actions to protect the environment. Such a solution by its nature would incorporate water quality improvements.

OBJECTIVE	ACTION	RESPONSIBILITY		95/96	96/97	97/98	98/99	99/00	FUTURE	COST £
		LEAD	OTHER							
To improve fish biomass and species richness.	To carry out environmental surveys to identify water dependent features and understand the impact of abstraction upon the fishery.	NRA, AWS	English Nature, Conservtn interests	■	■	■	■	■		c. 50k
	To implement a plan that addresses those areas where the impact of abstraction on the fishery is unacceptable.	NRA, AWS						■	■	c. 3k
	Evaluate options for improvements in sewage effluent discharges and implement appropriate option.	AWS	NRA	■	■	■	■			TBE

TBE = To be evaluated

AREAS OF RIVER CHANNEL AND RIVER CORRIDOR HAVE BEEN IDENTIFIED AS HAVING LOW PLANT SPECIES DIVERSITY.

BACKGROUND

River corridor surveys undertaken by the NRA on main river have identified the diversity of plant species within the river channel and river corridor. Significant areas have been identified as having low species diversity, particularly for river channel plant diversity where 90% of the main river in the catchment has low species diversity (ie. less than 10 species per 500m length).

OBJECTIVE	ACTION	RESPONSIBILITY		95/96	96/97	97/98	98/99	99/00	FUTURE	COST £
		LEAD	OTHER							
To increase plant species diversity on rivers.	Undertake habitat enhancement and restoration as part of flood defence maintenance and capital works. NRA to encourage landowners to restore wetland habitat.	NRA	Landowner, MAFF, C'ntryside, Commiss'n, Wildlife Trust, Forestry Commiss'n, Grimsby BC		■	■	■	■	■	(1)
	To carry out environmental surveys to identify water dependent features and understand the impact of abstraction on plant species diversity.	NRA, AWS	English Nature, Conserv'n Interests	■	■	■	■	■		c. 50k
	To implement a plan that addresses those areas where the impact of abstraction on plant species diversity is unacceptable.	NRA, AWS						■	■	c. 3k

(1) Dependent on flood defence capital and maintenance expenditure

NB As part of an agreement between NRA and AWS, AWS will carry out environmental surveys to identify water dependent features and assess the impact of groundwater abstraction upon them. AWS, in consultation with the NRA, will produce a plan to make any environmental improvements necessary.

ISSUE 24

RECREATIONAL USE OF LAKES AND RIVERS IS SEVERELY IMPACTED IN DRY PERIODS BY INADEQUATE FLOWS/LEVELS.

BACKGROUND

The catchment has a number of recreational fishing lakes principally associated with the Laceby Beck/River Freshney. In dry periods the recreational use of these lakes and rivers is restricted by low river flows and levels.

OBJECTIVE	ACTION	RESPONSIBILITY		95/96	96/97	97/98	98/99	99/00	FUTURE	COST £
		LEAD	OTHER							
To improve the reliability of recreational use of rivers and lakes in dry periods.	Review impacts of abstraction on fishing interests.	NRA	Recreational Interests				■			TBE
	Review feasibility of options to improve reliability.	NRA	Recreational Interests					■		TBE
	Implement any practical options.	NRA	Recreational Interests						■	TBE

TBE - To be evaluated

ISSUE 25

THE FREE PASSAGE OF EELS AND OTHER FISH IS LIMITED BY PHYSICAL BARRIERS.

BACKGROUND

The catchment has a number of watercourses which discharge to the Humber Estuary through tidal structures. The free passage of eels and other species into the river system is constrained by these sea doors, which are frequently sealed during periods of low flow to maintain water levels in the freshwater system. These structures inhibit fish species diversity and biomass in the lower part of the catchment.

OBJECTIVE	ACTION	RESPONSIBILITY		95/96	96/97	97/98	98/99	99/00	FUTURE	COST £
		LEAD	OTHER							
To reduce the impact of barriers on the migration of fish populations.	Identify key locations. Design and install eel/fish passes at appropriate sites.	NRA					■	■	■	30k

ISSUE 26

THE MAINTENANCE, IMPROVEMENT AND DEVELOPMENT OF FISHERIES IS RESTRICTED BY INSUFFICIENT SURVEY DATA.

BACKGROUND

The NRA has a target to maintain regular monitoring and re-appraisal of the fisheries resource to fulfill its duty to maintain, improve, and develop fish populations. To do this the NRA aims to undertake fish population surveys on major watercourses on a 3 year rolling programme. Within this catchment fish population surveys have been restricted to the Laceby Beck and River Freshney and no data have been collected on other waters. By including additional surveys on a range of smaller watercourses in this catchment in the rolling programme, the necessary data to maintain, improve and develop fish populations will be available.

OBJECTIVE	ACTION	RESPONSIBILITY		95/96	96/97	97/98	98/99	99/00	FUTURE	COST £
		LEAD	OTHER							
To collect the necessary survey data to enable the NRA to maintain, improve and develop fish populations.	Undertake additional fish population surveys on the Barrow Beck, East Halton Beck, Stallingborough, Oldfleet Drain and Buck Beck.	NRA		■			■		■	12k

ISSUE 27

THE CONSERVATION VALUE OF BARTON AND BARROW WETLAND SSSI'S IS AT RISK OF SERIOUS DEGRADATION DUE TO NATURAL SUCCESSION.

BACKGROUND

A number of flooded and abandoned clay pits on the landward side of the Humber Bank from North Killingholme to South Ferriby support large stands of reedbeds and wintering Bittern populations. One of these wetland complexes, Barrow and Barton SSSIs, is at risk of losing its specialised flora and fauna as a result of succession changes, ie. the natural tendency of such sites to become dry land. The Humber Reedbed Management Project has developed a strategy for protecting the sites' conservation importance.

OBJECTIVE	ACTION	RESPONSIBILITY		95/96	96/97	97/98	98/99	99/00	FUTURE	COST £
		LEAD	OTHER							
To maintain and restore the conservation value of Barrow/Barton wetland SSSI.	Undertake works identified in the Humber Bank Reedbed Management Project.	NRA	EN, Barton Claypits, Lincs Trust, Landowner, Others	■	■	■				11k
	Develop and implement the water level management plan for the site.	IDB	NRA, EN, Barton Claypits, Lincs Trust, Landowner, Others		■					TBE

TBE - To be evaluated

OPPORTUNITIES EXIST TO IMPROVE THE CONSERVATION VALUE OF THE ESTUARY.

THIS ISSUE IS A COMBINED REVISION OF ISSUE 29 (SUB-ISSUES 1 AND 2) FROM THE CONSULTATION DOCUMENT, IT IS ALSO IDENTIFIED AS ISSUE 14 IN THE HUMBER ESTUARY CATCHMENT MANAGEMENT PLAN ACTION PLAN.

BACKGROUND

Opportunities to enhance the conservation status of the Estuary are closely linked with the Humber Tidal Defence Strategy. The requirement to provide flood defences which are technically sound, economically worthwhile and environmentally acceptable provides a range of options for enhancement. Since the strategy provides an estuary wide approach it is appropriate that a similar one is adopted for conservation improvements. The life time of the strategy is such that some improvements will take a number of years to develop. However, it will still be possible to undertake local, often collaborative, initiatives as opportunities arise.

An important element of the work will be to ensure that it is possible to demonstrate the success of the conservation enhancement. Therefore it will be necessary to carry out baseline surveys of the conservation status against which future changes can be assessed.

OBJECTIVE	ACTION	RESPONSIBILITY		95/96	96/97	97/98	98/99	99/00	FUTURE	COST £
		LEAD	OTHER							
Assess the most effective and appropriate means of creating inter-tidal habitat by local managed retreat.	Agree site for Pilot scheme.	NRA, EN, RSPB, Local Authorities			■	■				TBE
	Establish baseline and continued monitoring.	NRA, EN, RSPB, Local Authorities, Landowners, NFU			■	■	■	■	■	TBE
Explore the opportunities for increasing the area of inter-tidal wetlands through take up of appropriate grant aided schemes.	Liaise with interested parties promoting organisations with active policy.	HEMS, Wildlife Trusts, RSPB, EN			■	■	■	■	■	TBE
	Carry out local initiatives to create and improve wetland habitats as opportunities arise.									
Assess the current landscape features of the Estuary.	Set up a study for landscape assessment.	NRA	CoCo		■	■				25k

TBE - To be evaluated

ISSUE 29

SILT BUILD-UP IN HAVENS IN LOW FLOW PERIODS RESTRICTS ACCESS TO RECREATIONAL CRAFT AND INHIBITS LAND DRAINAGE.

THIS ISSUE (ISSUE 30 IN THE CONSULTATION DOCUMENT) IS IDENTIFIED AS ISSUE 15 IN THE HUMBER ESTUARY CATCHMENT MANAGEMENT PLAN ACTION PLAN.

BACKGROUND

A number of watercourses discharge to the Estuary by gravity on the tidal cycle. Silt build-up in these havens, particularly during periods of low flow, affects the ability of the land drains to discharge and restricts access for craft. Their future ability to discharge will be further impaired by rising sea levels, with a consequent impact on upstream water levels. The East Halton Skitter is one of the worst affected watercourses.

OBJECTIVE	ACTION	RESPONSIBILITY		95/96	96/97	97/98	98/99	99/00	FUTURE	COST £
		LEAD	OTHER							
Adopt an integrated approach to ensure adequate channel and haven capacity.	Review current land drainage practices and develop appropriate options to overcome.	NRA	IDB, MAFF		■	■	■	■	■	15K
	Consider and take account of all users needs when considering appropriate options.	NRA	IDB, Recreation users		■	■	■	■	■	TBE

TBE - To be evaluated

ISSUE 30

THE RECREATIONAL POTENTIAL OF THE ESTUARY IS NOT FULLY DEVELOPED.

ISSUE 30 (Sub-Issue 1)

A CO-ORDINATED STRATEGY FOR THE MANAGED DEVELOPMENT OF RECREATIONAL USES WITHIN THE ESTUARY IS REQUIRED.

THIS ISSUE DERIVES FROM ISSUE 31 (SUB-ISSUES 1, 2 AND 3) IN THE CONSULTATION DOCUMENT. PART OF THIS ISSUE IS IDENTIFIED AS ISSUE 22 IN THE HUMBER ESTUARY CATCHMENT MANAGEMENT PLAN ACTION PLAN.

BACKGROUND

The use of the Humber Estuary for recreational pursuits remains undeveloped. The Estuary is a commercial navigation used by large and small vessels but the harsh estuarine environment and lack of bankside facilities does not encourage water activities such as power boating or sailing. In addition there is also a range of land based recreation such as bird watching, walking and wild fowling. There is potential for conflict between these uses and the potential disturbance/damage to sensitive sites.

OBJECTIVE	ACTION	RESPONSIBILITY		95/96	96/97	97/98	98/99	99/00	FUTURE	COST £
		LEAD	OTHER							
Produce a co-ordinated recreation strategy.	Contribute to HEMS. Implement strategy through planning process.	HEMSSG Local Authorities	NRA, Sports Council, Local Authorities, CoCo, BASC, ABP, BCU	■	■	■				TBE
Develop a management strategy to take account of conflicts.	Support and input to HEMS.	HEMSSG	NRA, Sports Council, Local Authorities, CoCo, BASC, ABP, BCU	■	■	■				TBE

TBE - To be evaluated

HEMS - Humber Estuary Management Strategy

HEMSSG - Humber Estuary Management Strategy Steering Group

THERE IS A NEED TO IMPROVE LIAISON WITH LOCAL PLANNING AUTHORITIES IN ORDER THAT NRA RECOMMENDATIONS ARE ADEQUATELY CONSIDERED IN THE PLANNING PROCESS.

THIS ISSUE COMBINES ISSUES 33 AND 34 FROM THE CONSULTATION DOCUMENT, IT IS IDENTIFIED AS ISSUE 28 IN THE HUMBER ESTUARY CATCHMENT MANAGEMENT PLAN ACTION PLAN.

BACKGROUND

The NRA is a consultee in the compilation of Development Plans and in the consideration of planning applications. The NRA has responded to these opportunities to influence the LPA's by setting up efficient and effective planning liaison arrangements.

The need to continue and build upon these arrangements is reflected in the Regional Planning Guidance, Planning Policy guidance notes, and circulars, issued by DoE, and in the NRA's "Guidance Notes for Local Planning Authorities on the methods of protecting the water environment through Development Plans", Planning Liaison guidelines, and Development Control manuals.

A Memorandum of Understanding (MOU) has been signed by the local authorities' representative associations and the NRA, in which the scope and timetable for provision of floodplain information has been agreed.

The NRA input is generally welcomed as it provides information and expertise on proposals, options and implications, which may not otherwise be available to the LPA. The NRA's concerns and representations are now generally accepted by LPA's as important factors in their decision making on Development Plans and planning applications. There remains some need to promote strategic approaches to infrastructure development to avoid the adverse effects of piecemeal development which increases the risk of flooding and pollution and reduces the opportunity for environmental improvements.

Lack of liaison often results in problems and higher risks for purchasers, lower standards and additional expenditure by owners, developers and public bodies.

OBJECTIVE	ACTION	RESPONSIBILITY		95/96	96/97	97/98	98/99	99/00	FUTURE	COST £
		LEAD	OTHER							
To increase NRA influence in the Town & Country planning process.	Contribute to the formulation of National Planning Policy and Regional Guidance.	NRA	DoE, LPA's, English Nature	■	■	■	■	■	■	(1)
	Negotiate the inclusion of NRA interests in LPA Development Plan policies and give specific regard to CMP issues.	NRA, LPA's		■	■	■	■	■	■	(1)
	Agree the inclusion of NRA requirements in decisions on planning applications.	NRA, LPA's	IDB's	■	■	■	■	■	■	(1)
To encourage environmental enhancements as part of development and redevelopment.	Negotiate with developers directly and in conjunction with LPA's.	NRA, LPA's	Developers	■	■	■	■	■	■	(2)

(1) Planning Liaison costs are internal costs.

(2) Cost to developers of protecting or enhancing the water environment may be positive (cost), neutral, or negative (saving) and are difficult to quantify in the context of this issue.

7. GLOSSARY OF TERMS USED IN THIS DOCUMENT

Abstraction	The removal of water from any source, either permanently or temporarily.
Aquifer	A water bearing-stratum situated below ground level. The water contained in aquifers is known as groundwater.
Bilge Water	The bottom of a ship where dirty water collects.
Blow-Well	Pond/lake formed by artesian waters bubbling to the surface.
Culvert	Channel or conduit carrying water across or under a road, canal etc.
Dangerous Substances	Substances defined by the European Commission as in need of special control. This is because they are toxic, accumulate and concentrate in plants and animals, or do not easily break down into less dangerous substances. They are classified as List I or List II.
Demand Management	The promotion of ideas to encourage industry, agriculture and the public to reduce their demand for water.
Diffuse Source	Pollution from non-point sources.
Ecology	The study of relationships between an organism and its environment.
Eutrophic	A description of water which is rich in nutrients. At worst, such waters are sometimes beset with unsightly growths of algae.
Faecal Coliform	Bacteria associated with human excreta.
Fauna	Animal life.
Fish Biomass	A measure of the quality of a fishery as found in terms of surveys, weight by area ie g/m ² .
Fish Pass	Structure designed to allow the passage of fish over/through weirs etc.
Flora	Plant life.
Floodplain	Area of land adjacent to a watercourse subject to periodic inundation.
Fluvial	Relating to the river.
Foreshore	The part of the shore that lies between the limits of high and low tides.
Foul Sewer	Sewer carrying waste from domestic and trade premises.
Geomorphology	Scientific study of land forms and of the processes that formed them.
Groundwater	Water which saturates a porous soil or rock substratum (or aquifer). Water held in storage below ground level.
Integrated Pollution Control	Integrated approach to controlling processes and their discharge to the environment.
Dissolved Oxygen	The amount of oxygen dissolved in water. Oxygen is vital for life so this measurement is an important test of the health of the river.
Main River	The watercourses shown on the statutory 'Main River maps' held by NRA and MAFF. The NRA has permissive powers to carry out works of maintenance and improvement on these rivers.
Managed Retreat	The deliberate abandoning of an existing tidal defence in order to obtain economic and ecological advantage. A new defence may be constructed landward of the old line.

Minimum Residual Flow (MRF)	Target flow set locally and not legally defined.
Nitrate Sensitive Areas (NSA) and Nitrate Vulnerable Zones (NVZ)	Land in areas where water sources exceed a 50mg/l nitrate limit or are forecast to by the year 2010 are designated NVZ's. Farmers are required to observe an action programme to reduce nitrate loss from their land in both NVZ's and NSA's. However, they do not receive compensation for such programmes where the land is designated a NVZ.
Permeability	The ease at which liquids can pass through rocks or a layer of soil.
Permissive Power	Power to undertake work where there is no obligation to do such.
RAMSAR Site	Wetland site of International Importance that is designated under the Ramsar convention.
Recharge	Water which percolates downwards from the surface into groundwater.
Riparian	Of, or on, land contiguous to the river.
Riparian Owner	Owner of riverbank and/or land adjacent to a river. Normally owns riverbed and rights to midline of channel.
River Flow Objective	A target flow to be identified by the NRA to protect existing river uses - especially with regard to the environmental need of the watercourse.
River Quality Objectives (Corporate Plan)	The level of water quality that a river should achieve, in order to be suitable for its agreed use. Is being replaced by Water Quality Objectives (WQO's).
Saline waters	Water containing salts.
Salmonid Fish	Game fish eg. trout and salmon.
Sedimentary Processes	Process by which sediments are eroded and deposited along the coastline. This impacts on beach and foreshore levels which have an important affect on tidal defences.
Sustainable	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.
Tidal Structures	Structures built to prevent inundation from the sea - will include sea defences and river outfalls etc.
Wetland	An area of low lying land where the water table is at or near the surface for most of the time, leading to characteristic habitats.

8. FUTURE REVIEW AND MONITORING

The NRA will be jointly responsible, with other identified organisations and individuals for implementing this Action Plan. Progress will be monitored and reported annually to the Lincolnshire Catchment Panel, to those who responded to the Consultation Document, to Action Plan “partners”, to local authorities and to other individuals and groups.

The reviews will examine the need to update the CMP in the light of changes within the Catchment and feedback from interested parties. Annual Reviews will take the form of a short progress report for all issues to include work achieved compared to that planned, to highlight any changes to the Plan. The period between major revisions will normally be five years.

Further details of the issues and options detailed in the Catchment Management Plan can be obtained from:

**Richard Kisby, Catchment Planning Officer, NRA Anglian Region, Northern Area, Aqua House,
Harvey Street, Lincoln LN1 1TF.
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9. CONTACTING THE NRA

The National Head Office of the NRA is in Bristol. Tel: 01454 624400. Fax: 01454 624409.

The Anglian Region Head Office is in Peterborough. Tel: 01733 371811. Fax: 01733 231840.

The Area Manager for the Northern Area of Anglian Region is based at:
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ISSUE 30 (Sub-Issue 2)

ACCESS IS RESTRICTED ON SOME EMBANKMENTS PARTICULARLY TO DISABLED PERSONS.

BACKGROUND

The use of floodbank embankments as recreational routes is developed in some parts of the Estuary. A number of designated routes exist, and there are informal routes over other sections. There are, however, sections which are unsuitable for use by disabled persons. The NRA own some sections of bank but most is in private ownership.

OBJECTIVE	ACTION	RESPONSIBILITY		95/96	96/97	97/98	98/99	99/00	FUTURE	COST £
		LEAD	OTHER							
Maximise the opportunities and potential for improving access and existing facilities on NRA land particularly for disabled persons.	Produce management plans for NRA owned banks.	NRA	Local Authorities	■	■					20k
	Maintain and improve car parks, footpaths and other recreational facilities or provide where appropriate.	NRA			■	■				TBE
Improve access on non-NRA owned land.	Encourage landowners to allow access using countryside stewardship schemes.	CoCo	Local Authorities	■	■	■	■	■	■	TBE

TBE = To be evaluated

ISSUE 31

HUMBER WETLANDS HAVE BEEN AFFORDED GREATER PROTECTION RECENTLY, BUT ARE POTENTIALLY STILL AT RISK FROM DEVELOPMENT.

(THIS IS A NEW ISSUE WHICH AROSE DURING THE CONSULTATION PROCESS.)

BACKGROUND

Although the designation of part of the Humber as a SPA (Special Protection Area) offers a degree of protection to wetlands, there are areas of wetland outside the SPA which are vulnerable as areas for development. The loss of parts of Humber wetlands could result in loss of habitat which could affect the conservation value of the Estuary.

OBJECTIVE	ACTION	RESPONSIBILITY		95/96	96/97	97/98	98/99	99/00	FUTURE	COST £
		LEAD	OTHER							
Maintain and conserve existing wetland areas within the area designated as SPA's.	Liaise with local authorities to prevent development of wetland areas.	Local Authorities, English Nature	NRA, RSPB, Developers, Owners	■	■	■	■	■	■	(1)
Discourage development of wetlands outside areas designated as SPA's.	Liaise with developers and local authorities to discuss proposals and encourage alternative proposals.	Local Authorities, English Nature, Developers, Owners	NRA	■	■	■	■	■	■	(2)

⁽¹⁾ Planning Liaison costs of NRA and LPA's are internal costs.

⁽²⁾ Cost to developers of protecting or enhancing the water environment may be positive (cost) neutral or negative (saving) and are difficult to quantify in the context of this issue.

ISSUE 32

THE SIGNIFICANT ARCHAEOLOGICAL RESOURCE OF THE HUMBER WETLANDS IS AT RISK FROM DEVELOPMENT AND REALIGNMENT OF FLOOD DEFENCES.

THIS ISSUE IS A REVISION OF ISSUE 32 IN THE CONSULTATION DOCUMENT, IT IS IDENTIFIED AS ISSUE 16B IN THE HUMBER ESTUARY CATCHMENT MANAGEMENT PLAN ACTION PLAN.

BACKGROUND

The archaeological potential of the Humber is considerable both to seaward and landward. It is recognised that the number of recorded archaeological sites and finds does not represent what might be expected if systematic field work was undertaken; even then unexpected discoveries could still be made. Development and realignment of flood defences could cause damage to both known and as yet unknown archaeological sites.

OBJECTIVE	ACTION	RESPONSIBILITY		95/96	96/97	97/98	98/99	99/00	FUTURE	COST £
		LEAD	OTHER							
Protect and conserve important archaeological sites.	Identify archaeological sites and validate their importance.	Local Authorities, English Heritage		■	■	■	■	■	■	TBE
	Local authorities to control development and other activities in high risk areas.	Local Authority	Developers, Archaeological interests, NFU							TBE
NRA to protect and conserve archaeological sites in carrying out its duties.	Early consultation between Local Authority and NRA.	NRA, Local Authority	English Heritage	■	■	■	■	■	■	TBE
	Carry out assessment of whether options are likely to contain an archaeological site.		English Heritage							
	Consider appropriate mitigation measures.	NRA, Local Authority	English Heritage	■	■	■	■	■	■	TBE
	Monitor work in progress to provide additional information as work progresses.	NRA, Local Authority	English Heritage	■	■	■	■	■	■	TBE

TBE = To be evaluated

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The National Rivers Authority will form the major part of a new organisation which will have responsibilities for the environmental protection of water, land and air. The new Environmental Agency starts its work of managing the environment in England and Wales on 1 April 1996.



The National Rivers Authority

Guardians of the Water Environment

The National Rivers Authority is responsible for a wide range of regulatory and statutory duties connected with the water environment.

Created in 1989 under the Water Act it comprises a national policy body coordinating the activities of 8 regional groups.

The main functions of the NRA are:

- Water resources* — The planning of resources to meet the water needs of the country; licensing companies, organisations and individuals to abstract water; and monitoring the licences.
- Environmental quality and Pollution Control* — maintaining and improving water quality in rivers, estuaries and coastal seas; granting consents for discharges to the water environment; monitoring water quality; pollution control.
- Flood defence* — the general supervision of flood defences; the carrying out of works on main rivers; sea defences.
- Fisheries* — the maintenance, improvement and development of fisheries in inland waters including licensing, re-stocking and enforcement functions.
- Conservation* — furthering the conservation of the water environment and protecting its amenity.
- Navigation and Recreation* — navigation responsibilities in three regions — Anglian, Southern and Thames and the provision and maintenance of recreational facilities on rivers and waters under its control.



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Help the
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