

# GRIMSBY CATCHMENT MANAGEMENT PLAN

## SUMMARY REPORT - NOVEMBER 1994



National Rivers Authority  
Information Centre  
Head Office

Class No .....

Accession No *AM9T* .....



**NRA**

*National Rivers Authority  
Anglian Region*

ENVIRONMENT AGENCY



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## INTRODUCTION

Catchment management planning aims to create a consistent framework within which all the NRA's functions and responsibilities can be applied in a co-ordinated manner within a particular catchment area.

During this planning process, the current state of the water environment and its associated uses are systematically analysed and compared with appropriate standards. Where these standards are not being met or are likely to be affected in the future, the shortfalls, together with options for action to resolve them, are presented as issues in a table at the end of this brochure.

## YOUR VIEWS

Formulation of this plan involves consulting and working with many public bodies, private companies and individuals. The purpose of the document is to identify a number of water management issues in the catchment and to seek comments on these issues and the options identified to resolve them. Comments are also sought on any other matters affecting the water environment in the catchment which should be examined by the NRA.

The next stage of the catchment management process is for the NRA to produce a Final Plan taking into account comments received during the consultation process. This Plan will form the basis for the NRA's actions in the catchment. The NRA will seek the commitment to planned actions by others wherever necessary.



*Sea defences - Grimsby*

Please write with your comments to the following address, from which a full copy of the consultation report may also be obtained:

Catchment Planning Officer, National Rivers Authority, Northern Area, Aqua House, Harvey Street, Lincoln. LN1 1TF

Comments must be received by: 28 February 1995.

## WHAT IS CATCHMENT PLANNING?

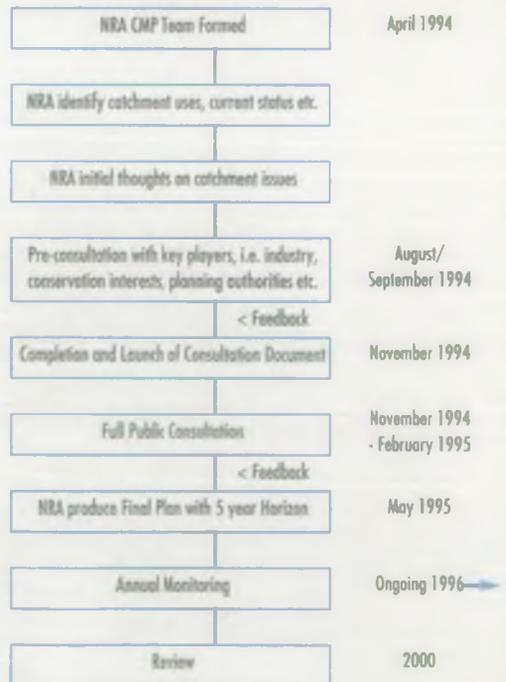
River catchments are subject to increasing use by a wide variety of activities, many of which interact giving rise to some conflicts. The many competing demands on the water environment and the interests of users and beneficiaries must be balanced.

Catchment management involves the NRA working with many people and organisations and using its authority to ensure rivers, lakes, coastal and underground waters are protected, and where possible improved, for the benefit of present and future users.

The NRA uses its resources to:

- Respond promptly to all reported pollution incidents and to emergencies due to flooding.
- Control pollution by working with dischargers to achieve improvements and monitor effluent compliance with standards.
- Maintain existing assets and invest in new ones to provide flood protection, manage and develop water resources and provide other NRA services.
- Monitor, survey and investigate the existing quality of controlled waters to determine short and long term changes.

**Table 1 - The Catchment Planning Process  
Grimsby Catchment Timetable**



- Determine, police, enforce and review conditions of water abstraction licences, discharge consents and flood defence consents in order to achieve operational objectives.
- Develop fisheries; promote recreation, navigation and conservation.
- Influence Planning Authorities to control development through Town and County Planning legislation.

## THE CATCHMENT

The Grimsby Catchment is located in South Humberside and North Lincolnshire and includes the area of the Chalk Wolds north and east of Caistor up to the Humber and the coastal strip running from Barton on Humber down to Cleethorpes.

The Chalk Wolds in the western part of the catchment include Areas of Outstanding Natural Beauty and consist of rolling countryside with small upland springs and streams. The area is the principal replenishment area for the Chalk aquifer and is predominantly agricultural.



The eastern part of the catchment is a relatively flat coastal strip which is bounded by the tidal defences along the Humber Estuary. The defences protect large areas of low lying land including the urban areas of Grimsby, Cleethorpes and Immingham and the major industrial areas along the Humber Bank. Extensive areas along the coastal strip are designated conservation areas.

Catchment Plans have already been produced for the catchment to the north and east (Humber Estuary CMP) and to the south (Louth CMP). The Plan for the Ancholme catchment to the west will be completed in December 1995.

## DEVELOPMENT/LAND USE AND INFRASTRUCTURE

The majority of the catchment is agricultural (around 83%), with large areas of arable farming. In the coastal strip there has been significant urban and industrial development in the last 25 years, including dock and wharf developments associated with the Humber Estuary.

The Catchment is served by an improving road network, including the M180 and link roads to the Humber Bridge. This network serves urban areas, the major industries and the dock facilities. There is a mainline railway link to areas north and south via Lincoln and Doncaster, and Humberside airport provides passenger and freight links to Europe.

Both agricultural and urban/industrial development can have impacts on ground and surface water quality in the catchment, development also has implications for flood defence and conservation interests.



*Oil refinery adjacent to South Killingholme Drain*

## WATER RESOURCES

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

The Chalk aquifer is heavily abstracted and there are concerns, particularly in dry periods, over the impacts on fishery and conservation interests in several spring-fed streams which drain from the Wolds across the coastal strip. There is also concern over the movement of saline water from the Estuary into the Chalk aquifer in the Grimsby area and the risk to water supplies.

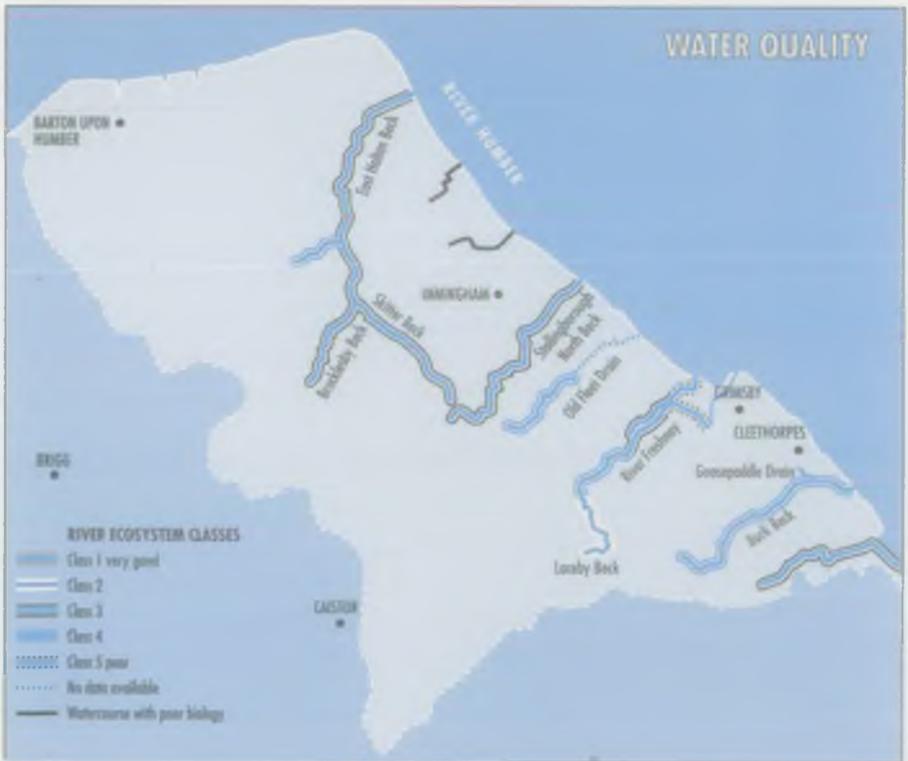
The groundwater resources of the catchment are fully committed to existing water uses. However when added to the external surface water sources the total resource available is adequate to meet demands in the catchment for the next 15 years.



## WATER QUALITY

Surface water quality in the catchment varies from the generally good quality associated with groundwater fed rivers and streams in the Wolds, to locally poorer quality waters in the coastal strip where there are saline intrusion effects and impact from run-off and discharges from industrial areas. Substantial ongoing investment in treatment plants to improve the quality of industrial and sewage effluent discharges are aimed at improving river, estuary and bathing water quality.

The protection of groundwater quality is an important objective in the catchment because of the importance of Chalk groundwater for public and industrial supply. 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 sources and the establishing of nitrate sensitive areas are recent developments to address these concerns.





## FLOOD DEFENCE

The catchment has around 50km of tidal defences which are vital to the protection of major urban and industrial areas which are located in areas below normal high tide levels. The need to continually maintain and upgrade the defences is ever present. Factors relating to the deterioration of tidal defences, the effects of rising sea levels and the gradual loss of foreshore, are being considered in a strategic study of tidal defences by the NRA.

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 the NRA and Internal Drainage Boards. Local drainage problems are associated with the siltation of river outfalls and other drainage restrictions though tidal inundation remains the principal flood risk factor in the catchment.

The NRA operates a flood warning service whereby the Police and other

organisations are advised of areas likely to be affected by flooding.

## FISHERIES

The fish population in the small rivers and drains comprise a mix of salmonid species in the upper reaches progressing downstream to more common coarse species such as roach, common bream, perch and pike.

Coarse fishing is popular and occurs 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 most recent fisheries survey in 1992 indicated poor fish biomass and poor species diversity in the catchment. There is concern that the incidence of low river flows and levels is a constraint on fishery development in rivers and lakes in the catchment.



*Westfield Lake, Barton Upon Humber*

## RECREATION

The principal focus for water based recreation within the catchment is associated with the coastal strip. The Humber Bank Path generally follows the line of the tidal defences, a number of lakes and marinas behind the sea defences provide facilities for most forms of water based recreation.

Inland there are other minor riverbank footpaths as well as the Viking Way which “starts” at Barton Haven and skirts along the western edge of the



*Boating Lake - Cleethorpes*

catchment. Additionally there are a number of recreational fishing lakes, and the Freshney Parkway recreation/conservation area extending along the River Freshney from Grimsby.

The Estuary area offers a number of opportunities to further develop the recreational potential in the catchment. Low river flows and levels restrict angling and amenity interests in dry periods on rivers and lakes.

## CONSERVATION

There are several conservation areas of national and international importance along the edge of the Humber Estuary. These include wetland sites associated with Chalk blow-wells, abandoned clay pits, mudflats and reedbeds. Ongoing management of these sites is important if their conservation importance is to be sustained.

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 related to low river flows and, in the coastal strip, eutrophication and saline intrusion. New or re-developed industrial/urban areas in the catchment offer opportunities for conservation improvements.



## ISSUES AND OPTIONS - GENERAL

This section of the plan considers options to address the issues that have been raised in the full Consultation Document. The options are presented as the initial thoughts of the Anglian Region of the NRA and do not constitute policy statements. Comments on the issues and options are requested together with any new ideas/suggestions.

Where possible, the body responsible for carrying out each option has been identified. In some areas this is identified as someone other than the NRA. However, the options as presented are intended as a plan to facilitate improvements to the water environment for the benefit of all users. Obviously, this will entail many bodies and individuals working together to fulfil the aims and objectives as detailed in this Catchment Management Plan. The issues and options are not shown in priority order, not costed and not to any timescale. After publication of this Consultation Document, the NRA will prepare a Final Plan to provide an overview of the catchment, a policy framework and a series of strategies to deal with the issues. Details of a proposed monitoring programme will also be identified.

## ISSUES AND OPTIONS

### ISSUE

#### 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

#### 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. THERE IS INSUFFICIENT INFORMATION AVAILABLE ON THE ENVIRONMENTAL IMPACT OF GROUNDWATER ABSTRACTION.

#### ABBREVIATIONS

For key to abbreviations please see page 45.

### OPTIONS

Reduce groundwater abstraction to quantities consistent with available water resources using statutory powers.

Reduce groundwater abstraction to quantities consistent with available water resources through legal management agreement with principal abstractors.

Seek reductions in groundwater abstraction to quantities consistent with available water resources through informal agreement with principal abstractors.

Carry out Environmental Assessments of potentially affected areas and implement defined remedial actions.

Require abstractors to carry out Environmental Assessment of potentially affected areas and implement defined remedial works.

Act now to reduce abstraction (voluntary or by using statutory powers).

RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
NRA Abstractors	Eliminates over-commitment of resources. Protects aquifer.	Compensation may be payable to abstractors. Costs of importing surface waters.
NRA Abstractors	Eliminates over - commitment of resources. Protects aquifer.	Costs to Abstractors. May not be permanent solution. No track record of such agreements. Costs of importing surface waters.
NRA Abstractors	Some elimination of resource over-commitment.	Not permanent solution. No legal basis. Requires continual review.
NRA Abstractors	Objective definition of environmental impacts and potential solutions. Logical approach. Environmental Protection.	Cost. Time to address.
NRA Abstractors	Objective definition of environmental impacts and potential solutions. Logical approach. Uses developer pays principle. Environmental protection.	Cost. Only piecemeal unless wider agreements reached with abstractors.
NRA Abstractors	Some environmental protection.	Cost. No improved understanding. May not be most cost effective or environmentally sound option. Partial solution.

## ISSUES AND OPTIONS

ISSUE	OPTIONS
<b>ISSUE 1 - Sub Issue 2 continued</b>	<p>Act now to augment flows/levels at affected sites.</p> <p>Require abstractors to augment levels/flows as part of licence conditions.</p>
<b>ISSUE 2</b> ACHIEVING THE RIGHT BALANCE BETWEEN ABSTRACTION AND THE NEEDS OF THE ENVIRONMENT IS LIMITED BY A LACK OF A CONSISTENT AND OBJECTIVE METHODOLOGY TO SET MINIMUM RESIDUAL FLOWS/MINIMUM CONTROL LEVELS TO TAKE ACCOUNT OF ALL WATER USES.	<p>R&amp;D to define methodology and NRA to develop a River Minimum Flow Objective policy.</p> <p>Use existing methods.</p> <p>National R&amp;D just to develop broad framework/concept. Regions implement within that framework.</p>

RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
<p>NRA</p> <p>NRA Abstractors</p>	<p>Environmental protection.</p> <p>Alleviation of low flows/levels. Uses developer pays principle.</p>	<p>Cost. No improved understanding. May not be the most cost effective or environmentally sound option.</p> <p>Cost. Only piecemeal unless wider agreements reached with abstractors. May not be most cost effective option.</p>
<p>NRA</p> <p>NRA</p> <p>NRA Regions</p>	<p>Methods established to enable MRF's to be set.</p> <p>Methods available.</p> <p>Ability to adopt flexible approach to local circumstances, within broad framework concepts.</p>	<p>Potentially protracted process to develop and refine sustainable methods to ensure striking a balance of all interests, on all rivers. Costs.</p> <p>No objective NRA method. Not cost effective nationally. No consistent NRA approach.</p> <p>Time to develop framework.</p>

## ISSUES AND OPTIONS

ISSUE	OPTIONS
<p><b>ISSUE 3</b> DEMAND FOR WATER IN THE CATCHMENT EXCEEDS AVAILABLE RESOURCES</p>	<p><b>Industry:</b> Increases in demand can be met from water supplies made available through AWS's imported water within their existing licence entitlements.</p> <p><b>Spray Irrigation:</b> Meet demand from winter storage reservoirs for subsequent summer use.</p> <p><b>Public water supplies:</b> Meet future demand by importing water into the catchment via NRA's Trent-Wilham-Ancholme river transfers and from AWS's Covenham Reservoir.</p> <p>Promote appropriate measures to reduce demand.</p>
<p><b>ISSUE 4</b> THE NEW CUT DRAIN FAILS ITS PROPOSED WATER QUALITY OBJECTIVE TARGET OF RIVERS ECOSYSTEM CLASS 4</p>	<p>New foul sewer.</p> <p>Dischargers to provide treatment.</p>
<p><b>ISSUE 5</b> EFFLUENT DISCHARGES INTO THE NORTH AND SOUTH KILLINGHOLME MAIN DRAINS INHIBIT THE DIVERSITY OF AQUATIC LIFE</p>	<p>Improve quality of effluent discharges.</p>

RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
<p>NRA AWS Industry</p> <p>NRA Farmers</p> <p>AWS NRA</p> <p>NRA All water users.</p>	<p>Demands could be met by AWS up to the current capacity of NRA's Trent Witham Ancholme river transfers.</p> <p>Small demands can be met.</p> <p>Current forecast demands for water can be met.</p> <p>Reduces the need for water abstraction. Environmental benefits. Follows a sustainable principle on the use of water. Reduced costs for all.</p>	<p>Industry has only one supplier of water.</p> <p>Not all demands could be met.</p> <p>Increased costs to AWS compared with the cost of groundwater.</p> <p>May be a partial solution.</p>
<p>AWS</p> <p>NRA Dischargers</p>	<p>Permanent solution could be achieved in short timescale. Improve quality to target. Development opportunity.</p> <p>Permanent Solution.</p>	<p>Cost.</p> <p>Impact on industry. Piecemeal approach.</p>
<p>Dischargers</p>	<p>Improve water quality and increase diversity.</p>	<p>Cost.</p>

## ISSUES AND OPTIONS

ISSUE	OPTIONS
<p><b>ISSUE 6</b> SIGNIFICANT NUMBER OF POLLUTION INCIDENTS ORIGINATE FROM INDUSTRIAL ESTATES IN THE CATCHMENT</p>	<p>Carry out proactive pollution prevention campaigns and identify potential sources of pollution and seek the co-operation and increased awareness of those responsible in reducing the pollution potential of their activity.</p> <p>Persuade local authorities to include measures when granting planning permissions.</p> <p>Seek additional regulatory powers to require pollution prevention works.</p> <p>Provide foul sewer/drainage infrastructure.</p> <p>Increase policing and prosecution.</p>
<p><b>ISSUE 7</b> THE LACEBY BECK/RIVER FRESHNEY FAILS TO MEET THE EC FISHERIES DIRECTIVE STANDARD FOR AMMONIA IN YEARS WHEN RIVER FLOW IS LOW</p>	<p>Improve effluent quality.</p> <p>Augment river flow to increase dilution.</p>

RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
<p>NRA Dischargers Developers</p>	<p>Reduced frequency of pollution incidents. Improved water quality. Cost savings on pollution incident investigations.</p>	<p>Cost of implementing pollution prevention measures.</p>
<p>NRA Local Authorities</p>	<p>Reduced frequency of pollution incidents. Improved water quality. Cost savings on pollution incident investigations.</p>	<p>Cost of implementing pollution prevention measures. Increased enforcement required.</p>
<p>NRA DoE</p>	<p>Reduced frequency of pollution incidents. Improved water quality. Cost savings on pollution incident investigations.</p>	<p>Cost of implementing pollution prevention measures. Increased enforcement required.</p>
<p>Developers</p>	<p>Reduced frequency of pollution incidents.</p>	<p>Cost.</p>
<p>NRA</p>	<p>Some reduction in incident frequency. Some improvement in water quality. Follows "Polluter Pays" principal.</p>	<p>Reactive and piecemeal approach. May not be the most cost effective option. Difficulty in tracing the source of pollutions.</p>
<p>NRA AWS</p>	<p>Meets target. Permanent solution. Environmental benefits.</p>	<p>Cost.</p>
<p>AWS</p>	<p>Meets target. Permanent solution. Environmental benefits.</p>	<p>Cost.</p>

## ISSUES AND OPTIONS

ISSUE	OPTIONS
<p><b>ISSUE 8</b>            SURFACE WATERS IN DOCK AND MARINA AREAS ARE BEING POLLUTED BY OILY BILGE WATERS</p>	<p>Provide disposal facilities.</p> <p>Increase boat owners awareness.</p>
<p><b>ISSUE 9</b>            REDUCE THE DISCHARGE OF "DANGEROUS SUBSTANCES" TO THE NORTH SEA.            (THIS ISSUE IS ALSO IDENTIFIED IN THE HUMBER ESTUARY PLAN)</p>	<p>Reduce discharges of Dangerous Substances in effluents by application of:</p> <ul style="list-style-type: none"> <li>a) Best available techniques.</li> <li>b) Waste minimisation programmes.</li> <li>c) Integrated Pollution Control.</li> </ul> <p>Do nothing.</p>
<p><b>ISSUE 10</b>            CLEETHORPES BATHING WATER FAILS THE EC BATHING WATER DIRECTIVE            (THIS ISSUE IS ALSO IDENTIFIED IN THE HUMBER ESTUARY PLAN)</p>	<p>Improve sewerage and sewage treatment.</p>
<p><b>ISSUE 11</b>            LITTER ACCUMULATION IN MANY WATERCOURSES OCCURS CLOSE TO URBAN DEVELOPMENT</p>	<p>Awareness campaigns.</p> <p>Litter removal.</p>

RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
<p>Dock owners</p> <p>NRA/dock owners</p>	<p>Reduce pollution improve visual appearance.</p> <p>Potentially some pollution reduction.</p>	<p>Cost.</p> <p>Likely only partial/short term solution.</p> <p>Cost to boat owners.</p>
<p>NRA HMIP Dischargers</p>	<p>Reduce concentration in food chain. Reduce input to North Sea. Achieve Environmental . Quality Standards.</p> <p>Reduce costs to industry.</p>	<p>Cost. Cost to industry increases as concentration decreases. Viability decreases as concentration decreases.</p> <p>UK fails to meet its commitment to the Ministerial declaration on the North Sea.</p>
<p>NRA AWS</p>	<p>Bathing Water complies with targets.</p>	<p>Cost.</p>
<p>NRA Local councils</p>	<p>Low cost. Some improvements.</p>	<p>Limited effectiveness.</p>
<p>NRA Local councils Local groups Landowners etc.</p>	<p>Aesthetic improvement.</p>	<p>Cost.</p>

## ISSUES AND OPTIONS

ISSUE	OPTIONS
<p><b>ISSUE 12</b>            NITRATE CONCENTRATIONS IN GROUND AND SURFACE WATERS EXCEED, OR ARE EXPECTED TO EXCEED 50mg/l</p>	<p>Designate/implement nitrate protection zones (NSA's, NVZ's).</p>
<p><b>ISSUE 13</b>            DEVELOPMENT ON AREAS OF CONTAMINATED LAND HAS THE POTENTIAL TO POLLUTE, BUT PROVIDES OPPORTUNITY TO CLEAN UP EXISTING PROBLEMS (THIS ISSUE IS ALSO IDENTIFIED IN THE HUMBER ESTUARY PLAN)</p>	<p>Persuade Local Authorities not to allow building on contaminated land.</p> <p>Ensure the pollutants within the site are effectively contained.</p> <p>Ensure the pollutants within the site are effectively removed.</p> <p>Ensure the site developer undertakes adequate measures of pollution prevention.</p> <p>Seek legislative change.</p>
<p><b>ISSUE 14</b>            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 IN THE HUMBER ESTUARY PLAN)</p>	<p>Ensure appropriate pollution prevention measures are in place.</p> <p>Ensure high risk sites are situated in areas with appropriate aquifer and flood protection.</p> <p>Ensure adequate emergency procedures are in place and publicised.</p>

RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
MAFF	Reduce nitrate concentrations in surface and groundwaters. Limit need for water treatment.	Cost. Impact on agricultural activity.
<p>NRA Local Planning Authorities Government</p> <p>NRA Local Planning Authorities Developer</p> <p>NRA Local Planning Authorities Developer</p> <p>NRA Local Planning Authorities Developer</p> <p>NRA Government</p>	<p>Risk of pollution not increased.</p> <p>Reduced risk of pollution.</p> <p>Reduced risk of pollution. Cleans up existing problems.</p> <p>Reduced risk of pollution.</p> <p>Reduced risk of pollution.</p>	<p>Does not permit land reclamation. Risk to environment by development elsewhere.</p> <p>Cost. Residual risk of pollution.</p> <p>Cost.</p> <p>Cost. Residual risk of pollution.</p> <p>Timescale of change for legislation.</p>
<p>NRA Local Planning Authorities Developer/ Operator</p> <p>NRA Local Planning Authorities Developer</p> <p>NRA Emergency Services Local Authorities Developer/Site Owner</p>	<p>Reduced risk of pollution.</p> <p>Reduced risk of pollution.</p> <p>Effective response to emergency incidents.</p>	<p>Cost.</p> <p>Restriction of development.</p> <p>Cost.</p>

## ISSUES AND OPTIONS

ISSUE	OPTIONS
<p><b>ISSUE 15</b>  <b>LOCALLY INADEQUATE RIPARIAN DRAINAGE SYSTEMS RESULT IN FLOODING PROBLEMS IN A NUMBER OF SMALL VILLAGES</b></p>	<p>Enmain watercourses and improve management and maintenance.</p> <p>Extend IDB area to cover management and maintenance.</p> <p>District Councils to use their land drainage powers to resolve drainage problems.</p> <p>Riparian owners to implement their maintenance responsibilities.</p>
<p><b>ISSUE 16</b>  <b>THE LEVEL OF FLOOD PROTECTION TO PROPERTIES ON THE RIVER FRESHNEY IS INADEQUATE</b></p>	<p>Carry out improvements to watercourses and structures.</p> <p>Provide upstream flood attenuation/ storage.</p> <p>Flood proof individual properties.</p>
<p><b>ISSUE 17</b>  <b>THE EFFECTIVENESS OF FLUVIAL FLOOD FORECASTING AND CONTROL, FOR SOME FLOOD RISK AREAS IN THE CATCHMENT, IS BELOW THE TARGET STANDARD</b></p>	<p>Improve riverflow/ river level/rainfall network, and extend the telemetry system.</p>

RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
<p>NRA</p> <p>IDB NRA</p> <p>District Councils</p> <p>Riparian owners</p>	<p>Reduces risk of flooding by better management.</p> <p>As above.</p> <p>As above.</p> <p>As above.</p>	<p>Doesn't meet main river criteria. Cost. Environmental Impact.</p> <p>Lengthy process. Cost. Environmental Impact.</p> <p>District Councils unwilling to address. Cost. Environmental Impact.</p> <p>Piecemeal approach. Environmental Impact.</p>
<p>NRA</p> <p>NRA</p> <p>NRA Local Authorities Individual householders</p>	<p>Reduced flood risk. Upholds land values.</p> <p>Reduced flood risk. Opportunity for environmental enhancement. Upholds land values.</p> <p>Some reduced flood risk. Relatively inexpensive. No environmental impact.</p>	<p>Cost. Environmental Impact.</p> <p>Cost. Loss of land. Environmental Impact.</p> <p>Piecemeal approach. Limited effectiveness.</p>
<p>NRA</p>	<p>Improved forecasting and more accurate measurement.</p>	<p>Cost.</p>

## ISSUES AND OPTIONS

ISSUE	OPTIONS
<p><b>ISSUE 18</b>            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 IN THE HUMBER ESTUARY PLAN).</p>	<p>Form a unitary authority to be responsible for all sea/tidal defences.</p> <p>Liaise with other bodies and try to mutually agree approach and standards.</p> <p>Do nothing.</p> <p>NRA adopts all tidal defences.</p>
<p><b>ISSUE 19</b>            A) EXISTING SEA DEFENCES WILL NEED TO BE SUBSTANTIALLY IMPROVED IF THE NRA IS TO MAINTAIN STANDARDS TO ACCOMMODATE RISING SEA LEVELS            B) THE STRUCTURAL INTEGRITY OF THE SEA DEFENCES NEEDS IMPROVING TO LESSEN THE RISK OF FLOODING DUE TO THEIR FAILURE THROUGH REACHING THE END OF THEIR USEFUL LIFE            (THESE ISSUES ARE ALSO IDENTIFIED IN THE HUMBER ESTUARY PLAN)</p>	<p>Improve existing defences to the justifiable design standard.</p> <p>Accept the reduced standard of protection and maintain at the reduced standard.</p>

RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
<p>NRA MAFF Government Riparian Owners</p> <p>NRA Riparian owners Local Authorities</p> <p>NRA MAFF Riparian Owners</p>	<p>Consistency of purpose and standards. One stop shop for customers.</p> <p>Consistency of purpose and standards. One stop shop for customers.</p> <p>No resource implications.</p> <p>Consistency of purpose and standards. One stop shop for customers.</p>	<p>Resource and set-up costs. Legislative change required.</p> <p>Limitations of existing legislation. Obtaining third party commitment to increased investment.</p> <p>An uncoordinated and inconsistent approach toward determining standards and levels of defence will remain.</p> <p>Costs. Legislation change required.</p>
<p>NRA ABP Industry Crown Estates</p> <p>NRA ABP Industry Crown Estates</p>	<p>This will optimise the level of protection.</p> <p>Lower cost than above option in the short term.</p>	<p>Cost. May have adverse effect on other coastal processes.</p> <p>Increased risk of overtopping Increased likelihood of sudden failure with consequent risk to life and property. Effectiveness of flood warning will decrease.</p>

## ISSUES AND OPTIONS

ISSUE	OPTIONS
<p><b>ISSUE 19</b> <i>continued</i></p>	<p>Consider managed retreat.</p> <p>Patch and repair defences/do little.</p>
<p><b>ISSUE 20</b> SEA DEFENCES NEED TO BE PROTECTED FROM INCREASED WAVE ATTACK BROUGHT ABOUT BY THE EROSION OF THE FORESHORE (THIS ISSUE IS ALSO IDENTIFIED IN THE HUMBER ESTUARY PLAN)</p>	<p>Improve existing defence.</p> <p>Undertake works to the foreshore.</p> <p>Consider managed retreat.</p> <p>Do nothing.</p>

RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
<p>NRA ABP Industry Crown Estates</p> <p>NRA Others</p>	<p>Possible environmental gain.</p> <p>Maintains the status quo.</p>	<p>Possible environmental loss Detrimental to landowners and the community. Limited option, not always appropriate. Legal framework unclear. Effect on coastal processes is unknown.</p> <p>Possible environmental loss. Detrimental to landowners and community. Limited option, not always appropriate. Effect on coastal processes is unknown. Increased risk of flooding.</p>
<p>NRA Others</p> <p>NRA Others</p> <p>NRA Government Others</p> <p>NRA Government</p>	<p>Maintains existing level of protection.</p> <p>Maintains existing level of protection. Maintains environmental benefits of foreshore.</p> <p>Possible environmental gains.</p> <p>Possible environmental gains.</p>	<p>Cost. May have an adverse effect on other coastal processes.</p> <p>Environmentally contentious.</p> <p>Possible environmental loss. Detrimental to landowners and the community. Limited option, not always appropriate. Legal framework unclear. Effect on coastal processes is unknown.</p> <p>As above. Reduced standard of protection.</p>

## ISSUES AND OPTIONS

ISSUE	OPTIONS
<p><b>ISSUE 21</b> INSUFFICIENT INFORMATION EXISTS ON THE RELATIONSHIP BETWEEN SEDIMENTARY PROCESSES, FRESHWATER FLOW, RISING SEA LEVELS AND ESTUARY BOUNDARIES (THIS ISSUE IS ALSO IDENTIFIED IN THE HUMBER ESTUARY PLAN)</p>	<p>Initiate a study to predict the impact on flood defences, navigable channels and estuarine habitats.</p> <p>Wait and see.</p>
<p><b>ISSUE 22</b> DEVELOPMENT AND UPGRADING OF LAND BEHIND DEFENCES MAY BE INCONSISTENT WITH THE CURRENT LEVEL OF PROTECTION AFFORDED (THIS ISSUE IS ALSO IDENTIFIED IN THE HUMBER ESTUARY PLAN)</p>	<p>Liaise with Planning Authorities to ensure there is consistency between Structure Plans and Catchment Management Plans</p> <p>Encourage appropriate development in low risk areas</p> <p>Improve the standards of the defence</p> <ul style="list-style-type: none"><li>a) Through Developer contributions</li><li>b) Through Local Council funding</li><li>c) Through NRA funding</li></ul>

RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
<p>NRA English Nature ABP Local Authorities MAFF</p>	<p>Improved knowledge of impact will aid the decision making of all parties. Could produce a coordinated approach by interested parties.</p> <p>There may be greater benefit to all parties by waiting for improved understanding of the processes involved. Provides time for a management framework for the estuary to be established.</p>	<p>The long term cost / benefit of any study is indeterminate. Lack of any suitable modelling techniques.</p> <p>May be long term cost disadvantages. Reduced level of protection. Reactive works may prove more expensive. Environmental Loss. Increased possibility of breaches with consequent risk to life and property.</p>
<p>NRA Planning Authorities</p> <p>Local Planning Authorities NRA</p> <p>NRA Others</p>	<p>Consistent approach.</p> <p>Environmental benefits. Reduced risk to new development.</p> <p>Developer pays.</p> <p>Co-ordinated approach can be most realistic and appropriate way of obtaining development funds.</p>	<p>Cost to individual companies may be too high.</p> <p>Competing Local Authority priorities.</p> <p>Unrealistic.</p>

## ISSUES AND OPTIONS

ISSUE	OPTIONS
<p><b>ISSUE 23</b> 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</p>	<p>Augment flows in the system.</p> <p>Reduce abstraction from catchment to improve natural flows.</p> <p>Increase instream habitat diversity.</p> <p>Improve quality of discharges.</p> <p>Periodic restocking.</p>
<p><b>ISSUE 24</b> AREAS OF RIVER CHANNEL AND RIVER CORRIDOR HAVE BEEN IDENTIFIED AS HAVING LOW PLANT SPECIES DIVERSITY</p>	<p>Restore and enhance during routine flood defence maintenance or Capital works without loss of channel capacity.</p> <p>Encourage landowners to restore wetland and riparian habitats (Countryside Stewardship, Set Aside schemes etc.)</p>

RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
NRA	Maintain Flows. Improve water quality by dilution.	Solution only downstream of augmentation point.
NRA Abstractors	Maintain flows. Improve water quality by dilution.	Cost. Limitation of available water resources to abstractors.
NRA	Increase water retention time in catchment. Improve riverine environment/habitat for fish.	Cost. Partial solution only.
AWS	Improve water quality.	Partial solution only. Solution only downstream of major discharge points.
NRA	Simple solution.	Doesn't address cause. Long term costs. Partial solution. Target failure at times of low flow.
NRA Landowners.  Landowners NRA Countryside Commission Wildlife Trust	Increased habitat diversity. Increased bio-diversity. Increased amenity value.  Increase habitat diversity. Increased bio-diversity. Increased retention time of water in catchment.	Cost.  Cost.

## ISSUES AND OPTIONS

ISSUE	OPTIONS
<p><b>ISSUE 25</b> RECREATIONAL USE OF LAKES AND RIVERS IS SEVERELY IMPACTED IN DRY PERIODS BY INADEQUATE FLOWS/ LEVELS</p>	<p>Reduce abstraction from Catchment to improve natural flows.</p> <p>Augment flows in the system.</p> <p>Discourage lake construction in inappropriate locations.</p> <p>Accept poor reliability in dry periods.</p>
<p><b>ISSUE 26</b> THE FREE PASSAGE OF EELS AND OTHER FISH IS LIMITED BY PHYSICAL BARRIERS</p>	<p>Install eels and/or fish passes at appropriate locations.</p> <p>Reconstruct restricting structures.</p>
<p><b>ISSUE 27</b> THE MAINTENANCE, IMPROVEMENT AND DEVELOPMENT OF FISHERIES IN THIS CATCHMENT IS RESTRICTED BY INSUFFICIENT SURVEY DATA</p>	<p>Incorporate Barrow Beck, East Halton Beck, Stallingborough Beck, Oldfleet Drain and Buck Beck into the routine 3-year fisheries rolling programme.</p>
<p><b>ISSUE 28</b> THE CONSERVATION VALUE OF BARTON AND BARROW WETLAND SSSI'S IS AT RISK OF SERIOUS DEGRADATION DUE TO NATURAL SUCCESSION</p>	<p>Undertake works identified by Humber. Bank Reedbed Management Project.</p>

RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
<p>NRA Abstractors</p> <p>NRA Abstractors</p> <p>NRA Planning Authorities.</p> <p>Owners.</p>	<p>Maintain improved flows and groundwater levels</p> <p>Maintain flows in river system and provide source of water for neighbouring lakes.</p> <p>Minimises the number of lakes affected by drought conditions.</p> <p>Minimal action.</p>	<p>Cost.</p> <p>Limitation of resource to abstractors. Partial solution.</p> <p>Partial solution, only beneficial downstream of augmentation point and to neighbouring lakes.</p> <p>Reduced recreation/conservation resource in some areas.</p> <p>Poor quality of use in dry periods. Public reaction.</p> <p>Cost of recreational loss eg. fish mortalities.</p>
<p>NRA</p> <p>NRA</p>	<p>Permit fish to move throughout river systems.</p> <p>Permit fish to complete life cycle.</p> <p>Permit fish to move throughout river systems.</p> <p>Permit fish to complete life cycle.</p>	<p>Cost.</p> <p>Water resource requirement.</p> <p>Costs would be excessive.</p> <p>Water resource demand.</p>
<p>NRA</p>	<p>Considerable increase of fisheries knowledge in catchment.</p>	<p>Increased effort and cost on data collection.</p>
<p>English Nature</p> <p>Landowners</p> <p>Barton Clay Pits Group</p> <p>Countryside Commission</p> <p>RSPB</p> <p>NRA</p>	<p>Restore aquatic conservation value of SSSI.</p>	<p>Cost.</p>

## ISSUES AND OPTIONS

ISSUE	OPTIONS
<p><b>ISSUE 29</b>  <b>OPPORTUNITIES EXIST TO IMPROVE THE CONSERVATION VALUE OF THE ESTUARY (THIS ISSUE IS ALSO IDENTIFIED IN THE HUMBER ESTUARY PLAN).</b></p> <p><b>ISSUE 29 - Sub Issue 1</b>  <b>EMBANKMENT OF THE ESTUARY HAS LEAD TO THE LOSS OF COMPLEX WETLAND HABITATS SUCH AS SALTMARSHES.</b></p> <p><b>ISSUE 29 - Sub Issue 2</b>  <b>OPPORTUNITIES EXIST TO IMPROVE THE HABITAT DIVERSITY OF COASTAL CORRIDORS</b></p>	<p>Managed retreat to natural profile or new line of defence.</p> <p>Managed creation of new habitats on landward side of bank on the back of capital and maintenance schemes eg. borrow pits, tidal storage/flushing reservoirs.</p> <p>Maximisation of existing wetland habitats through joint projects eg. Barton Claypits.</p> <p>Encourage landowners to restore/create wetlands and grazing marshes on either side of embankments.</p> <p>New embankments or repair to existing structures to be a varying profile with less steep slopes.</p>

RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
<p>Landowner NRA MAFF Countryside Commission Government</p>	<p>Restoration of wetland habitats. Full integration of salt to freshwater flora and fauna.</p>	<p>Cost. Limited number of viable sites. Full impact unknown. Effects on rural economy.</p>
<p>NRA Landowner MAFF Countryside Commission</p>	<p>Restoration of freshwater habitats. Increased integration of bird fauna.</p>	<p>Cost. Partial solution.</p>
<p>NRA English Nature Landowners County Trust Local Authorities Countryside Commission RSPB</p>	<p>Maintenance/enhancement of target species eg. bittern, bearded tit, etc. Development of management expertise.</p>	<p>Cost. Partial solution.</p>
<p>Landowners NRA MAFF Countryside Commission</p>	<p>Restoration of wetland habitats. Increased integration of bird fauna.</p>	<p>Cost. Partial solution.</p>
<p>NRA Riparian Owners District Councils Crown Estates MAFF</p>	<p>Suitable for hay cropping. Increased environmental asset.</p>	<p>Cost.</p>

## ISSUES AND OPTIONS

ISSUE	OPTIONS
<p><b>ISSUE 29 - Sub Issue 2 continued</b></p>	<p>Review the design and management of NRA banks.</p> <p>Restore and enhance during maintenance or capital works.</p>
<p><b>ISSUE 30</b> SILT BUILD-UP IN HAVENS IN LOW FLOW PERIODS RESTRICTS ACCESS TO RECREATIONAL CRAFT AND INHIBITS LAND DRAINAGE AT EAST HALTON AND BARROW HAVENS. (PART OF THIS ISSUE IS ALSO IDENTIFIED IN THE HUMBER ESTUARY PLAN).</p>	<p>Creation of tidal storage/flushing lagoons to prevent silt build-up.</p> <p>Dredging tidal channels.</p> <p>Re-align tidal channels with training walls.</p> <p>Pumped freshwater outfall to tide.</p> <p>Relocate outfalls.</p> <p>Increase flows by augmentation.</p> <p>Reduce abstraction to increase flows.</p>

RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
NRA MAFF	Identify conservation improvements.	Cost.
NRA	Increased environmental asset.	Cost.
NRA Recreational Interests IDB's	Increased salt/brackish wetland habitats. Maintenance/enhancement of target (rare) brackish species. Increased integration of bird, fish fauna between fresh and saltwater. Maintain natural estuarine channels. Improves recreational access.	Cost. Saline intrusion in present freshwater habitats. Potential saline intrusion into aquifer. On-going maintenance.
NRA ABP	Short-term cost. Improves recreational access. Improved drainage.	Temporary solution. Access problems. Loss/disturbance to environment/habitat.
NRA	Speed flows to maintain silt-free channel. Improved access for future dredging. Improved recreational access.	Cost. Loss/disturbance to environment/habitat. Will not maintain silt free channel in low flow conditions.
NRA	Maintain adequate outfall. Improved recreational access.	Cost. Long term effects on Haven morphology and does not solve access for craft.
NRA	Meets target.	Cost.
NRA	Meets target.	Cost.
NRA Abstractors	Meets target.	Impact on abstraction. Cost.

## ISSUES AND OPTIONS

ISSUE	OPTIONS
<p><b>ISSUE 31</b> THE RECREATIONAL POTENTIAL OF THE ESTUARY IS NOT FULLY DEVELOPED (THIS ISSUE IS ALSO IDENTIFIED IN THE HUMBER ESTUARY PLAN)</p> <p><b>ISSUE 31 - Sub Issue 1</b> A CO-ORDINATED STRATEGY FOR THE DEVELOPMENT OF RECREATIONAL USES OF THE ESTUARY IS REQUIRED.</p> <p><b>ISSUE 31 - Sub Issue 2</b> FOOTPATH ACCESS IS RESTRICTED ON SOME EMBANKMENTS PARTICULARLY TO DISABLED PERSONS</p> <p><b>ISSUE 31 - Sub Issue 3</b> POTENTIAL CONFLICTS EXIST BETWEEN RECREATIONAL ACTIVITIES AND OTHER USERS</p>	<p>Study present and potential uses.</p> <p>Provide better footpaths using small stone material.</p> <p>Provide better gate access.</p> <p>Provide car parks.</p> <p>Work with other interested parties to develop management strategies.</p>
<p><b>ISSUE 32</b> INDUSTRIAL, URBAN AND AGRICULTURAL DEVELOPMENT MAY HAVE AN ADVERSE EFFECT ON THE WATER ENVIRONMENT FOR EXAMPLE, LOSS OF HUMBER WETLANDS AND SITES OF ARCHAEOLOGICAL IMPORTANCE. (THIS ISSUE IS ALSO IDENTIFIED IN THE HUMBER ESTUARY PLAN).</p>	<p>Work with other interested parties to create a co-ordinated land-use strategy.</p>

RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
<p>NRA Local Authorities. Sports Council English Nature.</p>	<p>Better understanding of present and future requirements.</p>	<p>Cost.</p>
<p>NRA Local Authorities Sports Council</p>	<p>Provide better access to all users.</p>	<p>Cost. May provide access for inappropriate users or to inappropriate places.</p>
<p>NRA Local Authorities Sports Council</p>	<p>Provide better access to all users.</p>	<p>Cost.</p>
<p>NRA Local Authorities</p> <p>County Councils Local Councils NRA Recreational organisations English Nature</p>	<p>Provide better access to all users.</p> <p>Strategic approach. Reduce conflicts. Protect sensitive areas.</p>	<p>Cost.</p>
<p>Local Authorities NRA English Nature, etc. Landowners Lincs Trust for Nature Conservation</p>	<p>Maintain/enhance the water environment Maintain bio-diversity. Protect important archaeological sites.</p>	<p>Cost/time.</p>

## ISSUES AND OPTIONS

ISSUE	OPTIONS
<p><b>ISSUE 32 continued</b></p>	<p>Develop zonal restrictions.</p> <p>Encourage landowners to create sanctuary areas eg. through Countryside Stewardship.</p>
<p><b>ISSUE 33</b> 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 IS ALSO IDENTIFIED IN THE HUMBER ESTUARY PLAN).</p>	<p>To increase NRA influences in the planning process:</p> <ul style="list-style-type: none"><li>a) by contributing to the formulation of National Planning Policy</li><li>b) by seeking the inclusion of NRA policies into development plans</li><li>c) by agreeing the inclusion of NRA comments in planning application decisions.</li></ul> <p>Encourage environmental enhancements as part of development/redevelopment.</p>

RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
<p>NRA Local Authorities Landowners Developers</p> <p>Landowners NRA English Nature Countryside Commission Local Authorities</p>	<p>Strategic approach. Conserve and create wetlands. Conserve important archaeological site.</p> <p>Reduced disturbance. Benefits to other flora and fauna.</p>	<p>Restriction to some development.</p> <p>Cost. Limitation on development.</p>
<p>Dept of Environment NRA</p> <p>Dept. of Environment NRA</p>	<p>Reduced planning and operational costs.</p> <p>Clear guidance for landowners and developers on acceptable uses of land.</p>	
<p>NRA Local Planning Authorities</p> <p>NRA Local Planning Authorities</p> <p>NRA Developers</p>	<p>New development/redevelopment would have regard to constraints aimed at conserving the water environment. Reduces chance of inappropriate use of land.</p> <p>New development/redevelopment would have regard to constraints aimed at conserving the water environment. Reduces chance of inappropriate use of land.</p> <p>New development/re-development would have regard to constraints aimed at conserving the water environment.</p>	

## ISSUES AND OPTIONS

ISSUE	OPTIONS
<p><b>ISSUE 34</b>  <b>THE CUMULATIVE EFFECT OF PIECEMEAL DEVELOPMENT HAS AN ADVERSE EFFECT ON FLOOD DEFENCE, WATER QUALITY AND CONSERVATION INTERESTS</b></p>	<p>NRA to encourage local planning authorities to adopt strategic approach and fund infrastructure costs.</p> <p>NRA to encourage local planning authorities to adopt strategic approach and require developers to fund infrastructure costs.</p> <p>Allow piecemeal development to continue.</p>

### GLOSSARY

**Abstraction** - Removing water from the ground or river usually by pumping.

**Aquifer** - water bearing rock below ground level.

**Blow-wells** - Pond or lake formed by artesian pressure.

**Boreholes** - well sunk into a water bearing rock from which water will be pumped.

**Controlled Waters** - all rivers, canals, lakes, groundwaters, estuaries and coastal waters to three miles from the shore.

**Effluent** - liquid discharges from sewage treatment works/industry.

**Eutrophication** - the process by which water becomes rich in nutrients.

**Groundwater** - water which saturates a porous soil or rock substratum (or aquifer).

**Nitrate Sensitive Areas** - an area where nitrate concentrations in drinking water sources exceed or are at risk of exceeding the limit of 50 milligrammes/litre set by the 1980 EC Drinking Water Directive.

**Public Water Supplies** - water supplied by the water undertaker (Anglian Water Services for this catchment).

**Saline water** - water containing salts.

**Salmonid** - game fish, eg. trout and salmon.

**Surface water** - water collecting on a running off the surface of the ground (rivers and lakes).

**Water Resources** - water available in aquifers and rivers/streams which could be abstracted for use by others.

RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
NRA LPA	Strategic approach. Reduced risk to water environment. Lower overall infrastructure costs.	Cost to LPA.
NRA LPA Developers	Strategic approach. Reduced risk to water environment. Lower overall infrastructure costs.	Cost to developers. Difficult to control funding/timing.
LPA		Adverse impacts.

#### ABBREVIATIONS USED

<b>ABP</b>	Associated British Ports
<b>AWS</b>	Anglian Water Services
<b>DoE</b>	Department of the Environment
<b>HMIP</b>	Her Majesty's Inspectorate of Pollution
<b>IDB</b>	Internal Drainage Board
<b>LPA</b>	Local Planning Authority
<b>NSA</b>	Nitrate Sensitive Area
<b>NVZ</b>	Nitrate Vulnerable Area
<b>MAFF</b>	Ministry of Agriculture, Fisheries and Food
<b>R&amp;D</b>	Research and Development
<b>RSPB</b>	Royal Society for the Protection of Birds

## COMMENTS

**COMMENTS**

# 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 and 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.



**NRA**

**NRA EMERGENCY HOTLINE**

**0800 80 70 60**

**24 hour emergency telephone line**



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