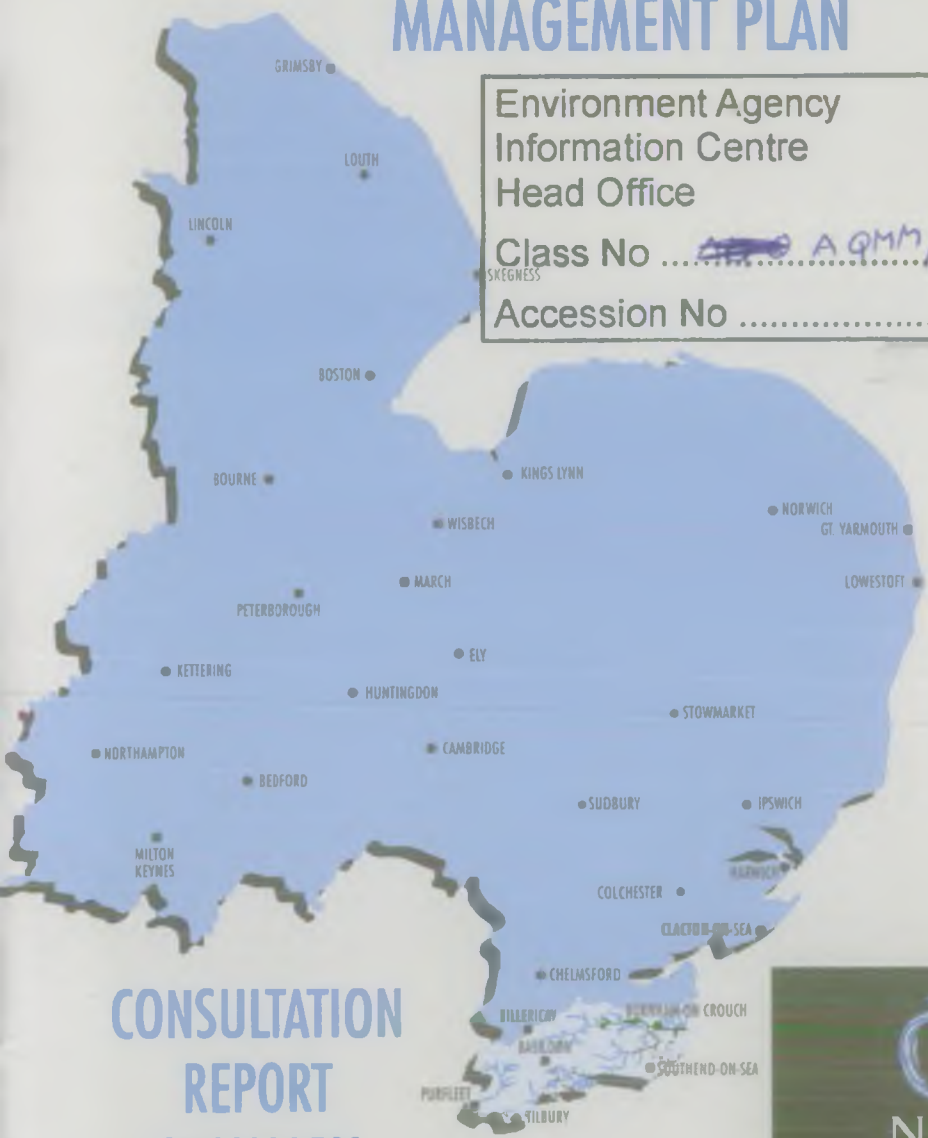



SOUTH ESSEX CATCHMENT MANAGEMENT PLAN

Environment Agency
 Information Centre
 Head Office
 Class No ... ~~411~~ A 9M/1
 Accession No



CONSULTATION REPORT SUMMARY



NRA
 National Rivers Authority
 Anglian Region
 NOVEMBER 1995

INTRODUCTION

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

During this planning process, the current state of the water environment and associated land is 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 and individuals. Your views on the issues identified are welcomed. You may also wish to comment on other matters affecting the water environment in the catchment area which you think should be examined by the NRA.

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

**Dr Jonathan Wortley, Planning Manager, National Rivers Authority,
Anglian Region - Eastern Area, Cobham Road, IPSWICH, Suffolk IP3 9JE**

Comments must be received by 29 February 1996.



A Thames-side view

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.
- Monitor, survey and investigate the existing quality of controlled waters to determine short and long term changes.
- 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 Country Planning legislation.
- Maintain and develop water resources and provide other NRA services.



Canoeing at Davy Down , Mardyke

THE CATCHMENT

The South Essex Catchment contains the Rivers Crouch, Roach and Mardyke, the drainage network within Canvey Island, and numerous smaller rivers, many of which drain directly to the sea or the Thames Estuary. The plan lies within the county of Essex, excepting a small area within the London Borough of Havering.

The rivers and estuaries support a wide range of uses, which give rise to many possible conflicts. There is some industrial use of water, together with a range of industrial discharges to both freshwater and tidal reaches. Agricultural interests make significant abstractions for spray irrigation in the summer months, as well as exerting a major influence on the management of water quality.

Major recreational and amenity users are further characteristics of the area. The estuaries provide sheltered waters allowing a variety of boating activities, focusing particularly on Burnham-on-Crouch.

CATCHMENT FACTS

Land Area	1841.54 km ²
Population 1990	678,000
Projected to year 2001	694,000

WATER RESOURCES

- Availability: **Groundwater** - No additional water available.
Surface Water - No additional summer water. Limited winter water available subject to cessation conditions to safeguard the water environment and other water users.

PUBLIC WATER SUPPLY ABSTRACTIONS:

Essex and Suffolk Water - There are two Chalk public water supply abstractions in the catchment. These are located at Linford and Stifford, and are licensed to abstract 3728 Ml/a (1 Ml/a = 1 million litres).

FLOOD DEFENCE

Length of Designated Main River	Fluvial	313.6 km
	Tidal	101.4 km
Length of Main River Embankment	Fluvial	4.5 km
Length of NRA Tidal Defences		145.4 km
Area at risk from Tidal Flooding		97.5 km ²
Area at risk from Fluvial Flooding		27.1 km ²

WATER QUALITY

Length of River in General Quality Assessment classification 1992 to 1994 in kilometres.

River Ecosystem	CATCHMENT				
	Quality	River Crouch	River Roach	Mardyke	All
Class A	Good	0	0	0	0
Class B	Good	0	0	0	0
Class C	Fair	0	1	14	15
Class D	Fair	7	27.5	11.5	46
Class E	Poor	7	6	4	17
Class F	Bad	5	0	0	5
TOTAL		19	34.5	29.5	83

Length of estuary in Coastal and Estuarine Working Party (CEWP) grades in kilometres.

CATCHMENT	CEWP GRADE				TOTAL
	A	B	C	D	
River Crouch	13.0	26.4	0.0	0.0	39.4
River Roach	1.0	14.9	0.0	0.0	15.9

CONSERVATION

Number of SSSIs	22	Number of water dependent SSSIs	7
Number of National Nature Reserves	2	Number of Ramsar Sites	4
Number of ESAs	1	Number of Special Protection Areas	4
Number of proposed SPAs/Ramsar Sites	1	Number of Local Nature Reserves	6
Number of County Wildlife Sites	345		

FISHERIES

Length of Coarse Fishery 11.7 km Length of Trout Fishery 0 km

In excess of 100 reservoirs, lakes and ponds throughout the catchment area are also used actively for freshwater angling.

NAVIGATION

The Anglian Region of the NRA has no statutory Navigation responsibility within this plan area. Coastal responsibility lies with the Port of London Authority and the Crouch Harbour Authority.

LAND USE

Over 42,000 hectares of agricultural land lie within the area of this plan. In excess of 50% of this land is Grade 3, but significant pockets of high quality Grade 1 and 2 land exist on the Dengie Peninsula, Foulness Island, adjacent to the tidal River Roach, and around Orsett in the Mardyke sub-catchment.

Cereal cropping predominates, with break crops. Significant areas are grazed by cattle and sheep, with some pig and poultry farming, and horticulture production.



Tilbury Fort and Power Station

The total population in the catchment is approximately 678,000 with 611,000 being located in the main towns. Industrial and commercial interests in the catchment include power stations, dock related import and export of goods, oil refining, manufacturing, warehousing and retail superstores. Approximately 19% of this catchment is urban or industrial.

DEVELOPMENT

The Essex County Structure Plan recognises a need for growth and provides for a potential increase in housing within the catchment area of approximately 6,385 new houses by the year 2001.

Employment growth provided by commercial and industrial development is also recognised as a need within the County Structure Plan. Provision is made for

development sites within the catchment area, where 176 hectares are earmarked for development up to the year 2001.

Much of the growth is likely to be accommodated in the existing towns and main villages, although it is expected that some will be provided by limited infilling within existing rural settlements.



Cruising the Thames Estuary

WATER QUALITY

The watercourses within this catchment are all relatively small and have very low summer flows. Most of the watercourses are also affected by heavy urbanisation which can give rise to problems with the surface water drainage both in terms of quantity and quality.

Large fluctuations in water flow and depth associated with the very quick run-off of rain falling on impermeable areas can cause rapid changes within the receiving watercourse. Water quality may also be affected by pollution events.

These factors combine to give rather poor water quality in freshwater streams within the catchment. This has historically resulted in a low perception of the viable river uses and consequently rather undemanding target quality objectives.



WATER QUANTITY

Water resources within the catchment are derived from both surface and groundwater sources. Overall availability is assessed by reference to river flow and the long term average recharge to the aquifer from rainfall. Current demands for public water supplies are heavily dependent on water imported into the catchment from the neighbouring Thames Region and the Essex reservoirs, Hanningfield and Abberton, located outside the catchment to the north which are themselves augmented by the Ely Ouse to Essex Transfer Scheme.

Groundwater resources within the catchment are fully committed and the area is classified as having “No Water Available”.

Surface water is also heavily utilised and there is no further summer surface water available. Some additional surface water may be available during winter periods when river flows are naturally higher and abstractors are encouraged to store this in reservoirs for summer use. As a further incentive, winter abstraction charges are significantly lower than summer rates.



FLOOD PROTECTION

Much of the land bordering the tidal waters is low lying and protected by sea defences. The Thames-side frontage of South Essex benefits from some of the best tidal defences in the country, following major capital investment to raise protection standards over the period 1972 to 1983. This was achieved as part of the tidal defence improvements for the Thames Estuary which included the City of London and the Thames Barrier at Silvertown.

Wave attack is a major problem on the Dengie frontage, the south part of which lies within the area of this plan: but because there are few properties at risk, reduced economic benefits mean less expensive solutions have to be found. The construction of offshore wave breaks, and salting regeneration schemes have been undertaken in an attempt to reduce the wave heights near the shore and reduce, or even reverse, the present general trend of salting erosion.

The freshwater rivers are generally of a natural channel section, and require little more in the way of maintenance other than annual weed cutting and selective desilting, with any unstable trees being removed or pollarded. During floods, blockage patrols keep gates and bridges clear.



CONSERVATION

Many areas within this catchment enjoy protection under statutory designations due to the importance of the conservation value of the different habitats in South Essex. The catchment contains 22 Sites of Special Scientific Interest. These designations may be given where meadows have botanical importance due to either diverse or unique wildlife, notably in brackish environments along the shoreline and down to the low water mark. Elsewhere some of these sites are listed for their geological or archaeological features.

Other national and international site designations exist within the catchment, such as Special Protection Areas, National Nature Reserves and Ramsar sites. These are all overseen by English Nature.



FISHERIES

Freshwater fisheries based on reservoirs, lakes, and ponds occur throughout the catchment, and represent a very significant resource. They are dominated by coarse fish, although put and take trout waters also occur. There are no river fisheries other than the Mardyke, which unfortunately does not support very good stocks at present.

Commercial shellfisheries are an especially important feature. These primarily involve oysters, cockles and mussels, although many whelks and winkles are also



taken. The Crouch and Roach Estuaries are the principal shellfishery areas for the laying of oysters, while cockle fishing is concentrated on the Maplin and Chapman Sands, and off the Southend Flats.

RECREATION

The catchment also provides some of the best locations for water-based recreation on the Anglian coast. For example Burnham-on-Crouch is one of the foremost centres in the United Kingdom for yachting and dinghy sailing.

The population density of the area is high and informal recreation pursuits are very popular due to the landscape value and the range and diversity of wildlife. Of the Country Parks within the catchment, five have over 45,000 visitors per annum with Thorndon Country Park receiving 590,000 people in 1990.



Thames sailing barge off Southend-on-Sea

ISSUES AND OPTIONS

ISSUE No 1

Failure to meet River Ecosystem Class 3 for dissolved oxygen.
MARDYKE - STIFFORD BRIDGE - MARDYKE SLUICE

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Survey catchment to identify reasons	NRA	Identifies causes leading to remedial action	Cost to NRA Potential cost to polluters
2. River Flow Objectives to be assessed and maintained to take account of effluent dilution	NRA	Compliance with target levels	Cost to NRA
3. Study of flow regime related to the operation of the tidal sluice and local abstraction	NRA	May identify improvements to sluice operation and river management	Cost to NRA
4. Augment flow	NRA	Additional dilution of discharges and prevention of stagnation	Cost to NRA Possible increase in river salinity due to nature of groundwater augmentation source
5. Examine weed control techniques	NRA	Uncertain	Cost to NRA May need research
6. Evaluate highway run-off impact and undertake amelioration	NRA/ Highways Authority	Reduces polluted input	Cost to NRA and Highways Authority
7. Do nothing			Continued failure

ISSUE No 2

Failure to meet biological LQI target and achieve RIVPACS Class A or B.
 MARDYKE - STIFFORD BRIDGE TO MARDYKE SLUICE
 OUTWOOD COMMON BROOK - Billericay to Crouch confluence
 RIVER CROUCH MEMORIAL PARK - WICKFORD
 PRITTLE BROOK - PRIORY PARK
 RAYLEIGH BROOK - upstream confluence with Eastwood Brook
 EASTWOOD BROOK - downstream confluence with Rayleigh Brook
 RIVER ROACH - ROCHFORD STATION

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Pollution prevention investigation	NRA/AWS/ Estate owners/ Site occupants	Reduces pollution	Cost to NRA/AWS/ Estate Owners Potential cost to polluters
2. Modifications to concrete channels	NRA/ Local Authority	Improves habitat and amenity	May not achieve objective Potential conflict with flood prevention Significant cost to NRA
3. Do nothing			Continued failure

ISSUE No 3

Occasional polluted conditions in the lower stretches of the River Crouch.
 RIVER CROUCH - MEMORIAL PARK, WICKFORD

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Pollution prevention campaign within catchment	NRA	Reduces pollution	Cost to NRA Potential cost to polluters
2. Enhance public awareness by education using Pollution Prevention Guidelines and PR material	NRA	May reduce pollution	Cost to NRA
3. Do nothing			Continued failure

ISSUE No 4

Failure to meet River Ecosystem Class 3.
ROCHFORD RESERVOIR

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Pollution prevention investigation within industrial areas	NRA/AWS/ Estate Owners	Reduces pollution	Cost to NRA/AWS Cost to potential polluters
2. Do nothing			Continued failure

ISSUE No 5

River fails to meet River Ecosystem Class 4.
GOLDSANDS BRIDGES BROOK - SOUTHMINSTER

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. River Flow Objective to be assessed and maintained to take account of effluent dilution	NRA	Compliance with target levels	Cost to NRA
2. Survey catchment to identify possible other causes	NRA	Identifies causes thus leading to remedial action	Cost to NRA Cost to potential polluters
3. Do nothing			Continued failure

ISSUE No 6

Concern over localised minor contamination of water in borrow ditches due to leachate generated from refuse incorporated in sea wall construction.

SOUTH FAMBRIDGE - SEA WALL BORROW DITCH

DENGIE DEAL HALL - SEA WALL BORROW DITCH

HADLEIGH MARSH - SEA WALL BORROW DITCH

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Remove refuse from sea walls	NRA/WRA	Eliminates short term problem and long term risk	Unlikely to qualify for grant aid Cost to NRA/WRA which may outweigh environmental benefit
2. Repair sea wall when leachate problems encountered	NRA/ECC	Targets resources as appropriate	Does not remove long term risk especially in terms of major breach
3. Do nothing other than routine wall maintenance	NRA		Does not address problem

ISSUE No 7

Failure to meet biological LQI target and achieve RIVPACS Class A or B.

PITSEA HALL FLEET

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Investigate catchment for quality of inputs to Fleet	NRA	Identifies problem areas	Cost to NRA
2. Review quality objectives	NRA	Identifies realistic quality target	None
3. Do nothing			Continued failure

ISSUE No 8

Concern over localised aesthetic and microbiological impact of Burnham STW.
LOWER CROUCH ESTUARY

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Improve effluent from Burnham STW	AWS	Improves water quality in estuary	Cost to AWS; not supported by AMP2
2. Relocate effluent outfall	AWS	Improves dilution Protects amenity area	Cost to AWS Disruption to navigation/ moorings
3. Do nothing			Does not improve quality of estuary

ISSUE No 9

Coastal and Estuarine Working Party Class B considered less than adequate for amenity and Shellfishery requirements.

ROACH ESTUARY

UPPER CROUCH ESTUARY

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Improve effluent from Rochford, Rayleigh West, South Woodham Ferrers and Wickford STWs	AWS	Improve water quality in estuary	Cost to AWS; not supported by AMP2
2. Pollution prevention investigation within industrial areas	NRA/AWS	Reduces pollution	Cost to NRA/AWS Potential cost to polluters
3. Study to assess trophic state of Estuaries	NRA	May lead to identification as a Eutrophic Sensitive Area	Cost to NRA Potential cost to AWS of nutrient removal required
4. Improve trade effluent control with respect to toxic substances	AWS/Industry	Reduces pollution	Cost to AWS/Industry
5. Undertake urban drainage study and implement control of polluting input	NRA/AWS	Identifies shortfalls in system and optimises solutions	Cost to NRA/AWS
6. Do nothing			Does not improve quality of estuary

ISSUE No 10

Concern over contamination in groundwater from Waste Disposal activity.
LINFORD PUBLIC WATER SUPPLY

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Discussion with site operators and County Waste Regulation Authority leading to remedial measures	Site Operator WRA	Resolves problem	Cost to site operators
2. Consider prosecutions	NRA	May act as warning to others	Will not overcome concerns Cost
3. Investigation to clarify issues	NRA/WRA	Targets concern and remedy	Cost to NRA/WRA
4. Do nothing			Does not resolve the problems Loss of public water supply source

ISSUE No 11

Bacterial contamination of recreation water.

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Improve effluent in terms of micro-organism levels from appropriate sewage treatment works	AWS	Improve quality in affected waters	Cost to AWS
2. Erect signs identifying "high risk" areas	NRA/ Local Authority	Allows public to make personal decision	May unnecessarily raise public concern Bad image for AWS
3. Do nothing			Does not improve quality of affected waters

ISSUE No 12

Migration of leachate in gravels.

PITSEA WASTE DISPOSAL SITE

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Discussion with site operator and County Waste Regulation Authority leading to remedial measures	Site Operator/ WRA	Resolves problem	Cost to site operators
2. Consider prosecution	NRA	May act as warning to others	Will not overcome problem Drain on resources
3. Do nothing			Does not resolve the problem

ISSUE No 13

Oil Contamination in chalk groundwater.

WEST THURROCK / PURFLEET

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Detailed survey to establish extent and degree of contamination - modelling may be an option	NRA and Site owners	Better understanding of extent of problem	Timescale Costs may outweigh results/ benefits of survey - outcome unlikely to identify additional resource availability for development
2. Do nothing			Continued lack of understanding full extent of contamination

ISSUE No 14

Concern over the quality of discharges from Surface Water Sewers on industrial estates.

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Prosecution when sources are proven	NRA	May effect an improvement	Action is taken after pollution has occurred Difficulty often in tracing source
2. Diversion of risk areas to foul sewer when available	NRA/AWS	Reduces pollution	Cost to dischargers
3. Install pollution reduction measures on sewerage systems	AWS/ Estate Owner	Reduces/prevents pollution	Cost to AWS or estate owner
4. Pollution prevention campaign	NRA/AWS/ Estate Owner	May affect an improvement if problems located	Cost to NRA AWS & Estate owner

ISSUE No 15

In River Needs are not quantified and Minimum Acceptable Flows are not defined for the catchment's rivers.

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Carry out ecological and in-river needs studies	NRA	Enables better protection and understanding of river ecology Improved resource management Verification of water resources availability	Cost and timescale Reduction in current HOFs may impact on water quality Increase in current HOFs would impact on water resource availability
2. Await outcome of National R&D Study on defining MAFs and other river flow objective studies	NRA	Better understanding of in-river needs National standardised approach identified for setting MAFs	Timescale Local issues could be "masked" by National approach
3. Do nothing			Inability to assess adequately water resource availability Need to rely on existing HOFs which may be inappropriate Actual minimum flows in some stretches may continue to be perceived as inadequate

ISSUE No 16

Low flows in the Mardyke are perceived to be inadequate to meet river needs.

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Set river flow objectives (RFOs), HOFs or MAFs	NRA	Improved resource management Provides better understanding of in-river needs Confirm/identify stretches of river concerned	Cost of investigations No progress can be made until review complete Any reduction in present minimum flows would have serious implications on discharge consents and the water environment
2. In-river needs study to assess actual requirements	NRA	Needed for setting river flow objectives (HOFs or MAFs)	Cost of studies
3. River engineering works eg. sympathetic channel modifications	NRA	Opportunity to improve flow and depth characteristics	Cost Extent of opportunities unknown
4. Await the outcome of existing studies aimed at defining river flow objectives (RFOs)	NRA	Better understanding of in-river needs Standardised approach	Timescale
5. Augment flows at times of need e.g. river support utilising rising groundwater	NRA	Increased flow Better use of water resources	Need to identify "target" flow first Cost of developing scheme Need for operating procedures
6. Do nothing			Low Flow perception likely to remain

ISSUE No 17

There is a lack of detailed understanding of the working of the Essex Chalk and superficial aquifers.

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Detailed investigation and modelling of system	NRA	Better understanding of how catchment aquifers respond to water resource developments and WQ implications	Timescale Costs may outweigh results/benefits of study - outcome unlikely to identify additional resource availability for development
2. Do nothing			Continued lack of detailed understanding of aquifer systems and interactions Poor management of water resources preventing optimum water resource management and development

ISSUE No 18

Available water resources within the catchment are inadequate to meet present and future demands compared against current resource assessments.

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Implement development recommendations identified in Regional Water Resources Strategy (Re stated below EOETS enhancements)	NRA/WCOs/ Developer	Comprehensive and coordinated development approach Multi-disciplinary approach	Timescale Costs

Continued on page 24

ISSUE No 18 continued

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
2. Encourage genuine on-farm winter fill storage reservoirs, for agricultural use	NRA/ Abstractors	Does not deplete resources Efficient utilisation of existing water resources Provides more reliable supply Possible amenity/ recreation opportunities	Cost to abstractor Subject to planning control
3. Enhance the existing Ely Ouse to Essex Transfer Scheme increasing supply reliability and Essex reservoir yield as identified in Regional Water Resources Strategy (Development of this option is outwith this remit, though relevant for supply augmentation)	NRA/ Abstractors/ ESW	Limited to rivers receiving support Optimises use of existing scheme Meets predicted demands	Environmental impact in adjacent catchments uncertain Could derogate existing sources at times of low flow Limited yield Reliability Cost
4. Encourage more water efficient agricultural practices	NRA/MAFF/ NFU/ Countryside Commission/ Farmers	Minimal cost to NRA Effective use of Government subsidies	Limited in effect May require change in agricultural practice Cost to farmers
5. Demand Management	NRA/WCO	Reduces demand and delays future development expenditure	Installation cost if by metering Impact on local users
6. Revocation of under-used and unused licences	NRA/WCO	Potential for environmental improvement and increased river flows Encourages use of winter water in preference Possible improved effluent standards in watercourse	Compensation costs Possible implications for existing abstractors

ISSUE NO 19

Catchment areas for wetland sites of conservation value need to be identified.

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Environmental studies at sites of particular concern	NRA/WCOs/ Conservation bodies	Better hydrological understanding of wetland behaviour Provides effective protection to wetlands Improved management opportunities	Timescale and cost Possible lack of National consistency in approach Possible implications for existing abstractors
2. Await outcome of existing studies aimed at providing a general methodology for the protection of wetlands	NRA	Consistent approach Cheaper than site specific studies	May not be appropriate for local issues - site specific investigations may still be necessary
3. Use empirical assessments	NRA	Quick	Danger of inaccuracy Subjective

ISSUE No 20

Implications of the impact of gravel/mineral extraction on groundwater levels and river flows.

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Review NRA policy	NRA	Could include measures to protect against potential interference to river flows	Time and cost If policy adopted, NRA may still have limited powers to implement or enforce views
2. Developer to carry out local investigations where necessary	NRA to advise developer to implement	Impact predictions made and remediation measures can be adopted	Additional resources to enforce conditions
3. Do nothing			Interference to flows remain at risk

ISSUE No 21

Potential threat of increased saline intrusion contaminating groundwater resources.

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Continue existing groundwater abstraction policy i.e. no additional abstraction		No additional staff costs Likely to contain intrusion at existing level	Existing intrusion levels likely to remain Potential for increased contamination induced by existing abstractors taking up full licensed quantity
2. Instigate studies to examine the extent of the problem and identify ameliorative measures	NRA	Identifies extent of the problem + ameliorative measures for consideration	May not be cost effective Cost
3. Artificial recharge	NRA/Developer	May offer some protection against contamination to existing abstractors	Unreliable source and insufficient quantities of water available for recharge Requires suitable geological conditions Unproven technique - may not be successful Long lead in time before remedial measures take effect Cost Potential to cause contamination

ISSUE No 22

Requirement for a management strategy for dealing with rising groundwater levels.

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Discharge to river system e.g. Mardyke	NRA/Developer	Helps mitigate the effects of flooding locally Could provide river support at times of low flow Increase surface water availability	Potential pollution risk Discharges cannot be guaranteed
2. Study to assess the extent of impact and identify management options. Including consideration of aquifer modelling	NRA	Provide effective management strategy	Costs may outweigh benefits
3. Discharge to sea outfalls	NRA/Developer	Helps mitigate effects of flooding locally	Non utilisation of potential resource

ISSUE No 23

Excessive ingress of saltwater through sluices.

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Prioritise and implement remedial measures to sluices on a phased basis	NRA/ Landowners	Prevents back drainage	High costs for uncertain benefits Will change nature of some coastal drains
2. Carry out study into extent of problem and establish advantages/disadvantages for wildlife	NRA/EN/ County Wildlife Organisations/ ESA Officer	Clearly defines extent and nature of ingress - determines if this is damaging or beneficial to the environment	Cost
3. Develop NRA policy on brackish habitats and implement works	NRA/EN/ Landowners	Clears way ahead for NRA and landowners Funding can be identified	May make effective management of Land Drainage on flat coastal drains difficult
4. Do nothing			Damaging effects may not be resolved

ISSUE No 24

Concern that Flood Defences may not meet NRA target standards.

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Undertake Standards of Service exercise	NRA	Identifies existing conditions and shortfalls Integrated approach to defence needs Aids feasibility studies Provides data for planning and performance measures	Needs continually updating Cost implications
2. Continue to develop 10 year needs programme	NRA	Integrated approach to defence needs Known priorities and costs Aids capital investment Utilised resource economically	May identify more work than funding allows
3. Do nothing			Fragmented approach to Flood Defence needs Lack of priority

ISSUE No 25

Concern over the effects of sea level rise on tidal defences.

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Sustain defences at existing levels	NRA	Short term - cost savings	Standard of protection is reduced Loss of intertidal wildlife habitats Increased maintenance requirement Increased frequency of flooding
2. Managed retreat where economic, & technically and environmentally acceptable	NRA	Medium to long term - cost savings Development of saltmarsh as soft defence Environmental enhancement opportunities	Land becomes intertidal Loss of coastal frontage protection
3. Improve sea defences	NRA	Maintains target standards of protection	Loss of intertidal wildlife habitats Cost
4. Do nothing			Increased frequency of flooding Likelihood of sudden failure Increased risk to life and property Loss of intertidal wildlife habitats

ISSUE No 26

Suitability of refuse fill as a future sea defence material.

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Continue to use as a construction material	NRA	Low initial cost Eases County Waste disposal problem	Long construction period High pollution risk Endless commitment to maintain in hostile environment High long-term costs Environmentally unacceptable
2. Continue to use traditional sea wall construction materials	NRA	More stable defence Relatively rapid construction process Easily modified and improved in the future Environmentally more acceptable for coastal environment	Moderate construction costs

ISSUE No 27

Concern over pollution potential of existing refuse fill sea walls.

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Maintain existing fill sites	NRA/ECC	Retains sea defence at present standard Reduces risk of failure and consequent serious pollution	Continued leachate problems Increasing cost Increasing risk from sea level rise Endless commitment to maintenance
2. Remove existing refuse fill	NRA/ECC	Eliminates long term risk of pollution	Provide alternative sea defence High cost Find another site for refuse High risk of pollution during works
3. Monitor and evaluate impact	NRA/ECC	Quantifies clearly nature of risk Identifies possible modifications Provides possible warning of failure	Cost Does nothing to remove risk Endless commitment to maintain
4. Additional new works to modify or control problem	NRA/ECC	Limits risk of pollution and loss of defence	Cost Endless commitment to maintain Extensive monitoring Limited risk remains
5. Do nothing			Inevitable serious environmental pollution and flooding

ISSUE No 28

Concern over lack of continuity of tidal defence responsibility.

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. NRA to take over all tidal defence frontages	NRA	Common standard of tidal defence Single body for planning and implementation of schemes	Cost - presently paid for by other organisations
2. NRA monitor and advise third parties on standards	NRA/Other landowners/ (MOD, District Councils etc.)	Minimal cost to NRA Requires no change of responsibility Helps provide common standard	No guarantee works are done on time or to standard Extended negotiations needed
3. Do nothing			Risk of failure of defences Inconsistent standards of defence Possible damaging effect on adjacent NRA defences

ISSUE No 29

Development control and the water environment. Development often increases risks to the water environment but NRA has only limited powers to impose conditions on development.

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Encourage planning authorities to adopt NRA policies and guidance within their structure and local plans	Local Authorities/ NRA/ Developers/ Landowners	Ensures that matters for which the NRA are responsible are fully taken into account in all development proposals	Implications on Local Authority control Possible cost implications to landowners/developers
2. Do nothing			Uncontrolled development in flood risk areas and damage to the water environment

ISSUE No 30

Concern over the effects of past river management practices on the river environment.

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. To develop and implement effective standard methods to describe classify and monitor the conservation resource	NRA	Provides basis for decision making	Cost
2. Identify areas with potential for restoration and enhancement and determine costs e.g. Mardyke	NRA	Provides basis for decision making	Cost
3. Undertake restoration and enhancement schemes	NRA/ Landowners/ Conservation Bodies	Improves habitats and landscape	Cost Requires agreement of the landowner and lead in time to plan work

ISSUE No 31

Concern about the adverse effects of bait digging on the foreshore.

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Promote liaison between all interested parties, and work towards a common understanding and jointly agreed position statement	NRA/English Nature/Crown Estate Comm./ Councils/Kent & Essex Sea Fisheries Comm./ Essex Wildlife Trust/RSPB/ Bait Digging Associations	Promotes a common approach to a recurring problem Improves public awareness	Difficulty of coordinating the wide range of interested parties
2. Promote a better and coherent management framework through a code of good practice, self regulating associations, and local byelaws, as appropriate	NRA/English Nature/Crown Estate Comm./ Councils/Kent & Essex Sea Fisheries Comm./ Essex Wildlife Trust/RSPB/ Bait Digging Associations	Identifies bodies responsible for taking action Provides cohesive management framework	Difficulty of coordinating the wide range of interested parties
3. Do nothing			Does not address problem.

Concern about degradation of the traditional lowland landscape.

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. To develop and implement effective standard methodology to describe classify and monitor the conservation resource	NRA	Provides basis for decision making	Cost
2. Identify areas with potential for landscape restoration and enhancement	NRA/MAFF/ Wildlife Trusts/ Riparian Owners	Provides basis for decision making	Cost
3. Undertake restoration and enhancement schemes	NRA/MAFF/ Wildlife Trusts/ Riparian Owners/ Councils/ Thames Chase	Improves habitats and landscape and meets NRA's responsibilities To promote conservation	Cost Requires agreement of the landowner and lead in time to plan work
4. NRA continue to develop a programme of riverside tree replacement and management within its maintenance operations	NRA/Riparian Owners	Improvement of habitats and landscape Meets NRA's responsibility to promote conservation	Cost Possible conflict with Flood Defence requirements

ISSUE No 33

Requirement to identify a rolling programme of conservation and recreation opportunities at an early stage within the river maintenance programme.

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Extend the lead-in time for the Flood Defence maintenance programme to allow adequate liaison with landowners conservation and recreation bodies	NRA/ Landowners/ LFDC	Provides the required lead-in time to identify all conservation and recreation opportunities linked to NRA works	Requires longer term planning by Flood Defence and landowners
2. Do nothing			Inability to maximise opportunities for conservation and recreation

ISSUE No 34

Requirement to investigate opportunities for long term set-aside land as riparian buffer strips.

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Investigate possibilities of riparian buffer strips which coincide with long term set-aside Liaise with landowners, MAFF and ADAS	Landowners/ MAFF/ADAS/ NRA	Significant improvement in river corridor habitats Gives potential access for NRA maintenance Reduction in pollution and nutrient run-off to rivers	May not be possible May be necessary to get agreement with several landowners
2. Identify suitable trial site	NRA/ Countryside Project	Trial site could indicate advantages of wider application	Cost Trial site will only reflect particular/local characteristics
3. Do nothing Await outcome of trial by MAFF			Possible missed opportunities

ISSUE No 35

Need to improve liaison with Essex County Council over protection of sensitive archaeological sites adjacent to NRA maintenance and minor capital works.

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Improve procedures for contacting appropriate organisations when precise details of NRA works have been finalised	NRA/Essex Councils/ English Heritage	Enhances protection given to archaeological sites and identifies possibilities to enhance archaeological interests of river valleys and foreshore	Requires time for identification of non-scheduled archaeological sites May delay NRA works
2. Evaluate results of national R&D study on current liaison practice	NRA	Consistent approach	Timescale
3. Do nothing			Continued risk of damage to archaeological sites

ISSUE No 36

Requirement to promote appropriate public access to rivers and sea walls in conjunction with other organisations.

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Continue participation in Countryside Management projects and liaison with other bodies to work collaboratively to enhance appropriate public access to rivers	NRA/ Countryside Management Project/ Councils/ Countryside Commission	Meets NRA's recreation objectives Promotes wider public use of countryside especially appropriate public access to rivers	Needs co-operation of riparian landowners Limited opportunities
2. Investigate possible use of riparian set-aside land for use in enhancing public access to river via permissive paths	Landowners/ NRA/Councils	Good use of set-aside land adjacent to rivers	Require landowners agreement
3. Do nothing			Failure to meet recreation objective

ISSUE No 37

There is a lack of public information boards detailing NRA activities.

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Provide information boards and other interpretive material at suitable locations	NRA/Local Conservation Group/ Landowners/ Councils	Better public information on NRA's activities and functions	Initial cost On-going maintenance cost
2. Do nothing			Missed opportunity for providing information and good publicity

ISSUE No 38

Need to improve liaison over local strategies in the area concerning recreational pursuits and estuary management.

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Identify ways in which the NRA can assist with a liaison network to co-ordinate and plan recreational and estuarial strategies (The group would contain participants of the sporting activities to ensure a broad overall view)	NRA (Catchment Panels)/ Councils/ Sports Council/ English Nature/ All interested parties	Provides basis on which to plan and co-ordinate recreational and estuarial strategies Enhancement of NRA recreations profile Likely to generate ideas for collaborative funding	Time constraints Cost
2. Do nothing			Missed opportunity for enhancement

ISSUE No 39

Requirement to draw up Water Level Management Plans, where the NRA is the Operating Authority.

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Draw up Water Level Management Plans (WLMPs) for wetland SSSIs according to the prioritisation by English Nature where NRA is the Operating Authority	NRA/ English Nature	Complies with MAFF requirement for WLMPs Conservation of wetland SSSIs Replaces verbal agreement for the management of site with a written plan	Cost - need for additional resources
2. Do nothing			Fails to meet requirements

ISSUE NO 40

Fish stocks in the Mardyke do not reach their target class.

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Restock	NRA	Rapid action possible	Probability of failure if conditions are unsuitable
2. Address conditions already identified as limiting (see Issues 1,2, 14,15,16,23 & 30)	NRA	Improved environmental conditions leading to fish stock enhancement	Cost Cost may out-weigh benefit Possibly incomplete solution
3. Investigate conditions to determine full range of limiting factors	NRA	Comprehensive problem definition leading to restoration plans	Cost Time delay Findings may be inconclusive
4. Implement in channel improvements to enhance physical habitat conditions	NRA	Improved conditions for fish, greater habitat diversity, and more conservation interest	Cost
5. Do nothing			Poor fish stocks likely to persist

ISSUE NO 41

Optimum fisheries management policies for the Thames Estuary as a whole do not exist, and cannot be developed for isolated parts, such as that covered by this plan.

OPTIONS	RESPONSIBILITY	ADVANTAGES	DISADVANTAGES
1. Responsible Authorities to coordinate coherent fisheries management policies for the Thames Estuary as a whole	NRA (Anglian, Southern & Thames Regions) Kent & Essex Sea Fisheries Committee/ MAFF	Consistent Byelaw & Licensing Regimes applied Fisheries management policy & practice fully coordinated Conflicts between fisheries avoided &/or resolved	Cost Probable requirement for Byelaw revision
2. Do nothing		None	Disparate Byelaw and Licensing regimes will continue Unsatisfactorily coordinated fisheries management will persist Conflicts may arise between different fisheries interests which could not be resolved under the present arrangements

ABBREVIATIONS USED

ADAS	Agricultural Development Advisory Service	MAFF	Ministry of Agriculture, Fisheries and Food
AMP2	Second Asset Management Plan	MOD	Ministry of Defence
AWS	Anglian Water Services	R&D	Research and Development
ECC	Essex County Council	RFOs	River Flow Objectives
EN	English Nature	RSPB	Royal Society for the Protection of Birds
EOETS	Ely Ouse to Essex Transfer Scheme	SPA	Special Protection Areas
ESA	Environmentally Sensitive Area	SSSIs	Sites of Special Scientific Interest
ESW	Essex and Suffolk Water	WCOs	Water Companies
HOF	Hands Off Flow	WLMPs	Water Level Management Plans
LFDC	Local Flood Defence Committee	WQ	Water Quality
MAF	Minimum Acceptable Flow	WRA	Waste Regulation Authority

NOTES

NOTES

The National Rivers Authority will form 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.



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