

THE CATCHMENT

The Louth catchment covers 1040 Km² mainly within the county of Lincolnshire although part of the catchment is in Humberside. There are seven sub-catchments which drain to the sea. There is considerable physical and biological diversity in the sub-catchments. The catchment includes a sandstone catchment (River Lymn), chalk catchments (River Lud, Great and Long Eau) and clay lower catchments on the coastal strip. The coastal strip extends for about 60 Km much of which is low lying and protected by flood defence.

CURRENT SITUATION AND PLANNED ACTIONS

The actions to be taken in the catchment, as a result of the consultation exercise, are outlined in the following tables. A number of issues require feasibility studies and appraisal of options prior to work commencing on site and in some cases the solving of issues may not be viable. Since there is limited funding available to meet regional requirements, funds are allocated on a priority basis. Therefore, the timing of planned actions will depend upon their priority compared with actions proposed elsewhere in the Anglian Region.

WATER QUALITY

Of the 160 Km of river included in the National Water Council 1990 survey nearly 120 Km (75%) are in the very good and good category. The major pollutant risk is likely to arise from agriculture and the 22 sewage treatment works. There are three industrial discharges in the catchment. The NRA regularly monitors all the discharges and works closely with farmers to reduce the risk of agriculture pollution.

There is one sea outfall (Ingoldmells). Bathing waters in the vicinity complied with the Bathing Water Directives in both 1990 and 1991.

Groundwater quality is good but there is risk of saline intrusion into the coastal aquifer. The DoE may implement a groundwater protection zone in part of the catchment.

ISSUES	PRIORITY H/M/L	RESPONSIBILITY	ESTIMATED COST	ACTION PERIOD					DETAILS	BENEFICIARIES/ BENEFIT
				93/94	94/95	95/96	96-			
1. River Lud - Headwaters to Ticklepenny Lock. Water quality is not capable of supporting a breeding population of trout.	High.	NRA/AWS		Action Programme subject to a region wide priority based improvement programme.					Overflows from sewerage systems cause water quality problems. The frequency of the operation of such overflows should be minimised to reduce the impact on water quality.	Cleaner Water. Fishermen. Flora & Fauna.
2. Louth Canal - downstream of Louth STW. Poor diversity of biological life is attributed to either Issue 1, STW performance or depleted dilution flows.	Low.	NRA/AWS		Costs to be determined as part of the prioritisation procedure.					Improved biological quality may occur as a consequence of implementing Issue 1. If this does not occur then the option of revising the consent for Louth STW should be implemented.	Cleaner Water. Fishermen. Flora & Fauna.
3. Salt water intrusion in Louth Canal affecting Public Water Supply abstraction and fisheries/conservation uses.	High.	NRA/AWS/ IDB	Dependant on actions taken. Estimate 50 - 100k.	*	▲	▲	▲	Minimising the degree to which salt water intrusion occurs via IDB systems and overtopping of Tetney Weir requires the co-ordinated efforts of all those responsible for maintaining/operating structures through which salt water may discharge into the Louth Canal.	Cleaner Water and greater protection for public water supply. Fishermen. Flora & Fauna.	
4. Provision of a continuous water quality monitor on the Louth Canal.	Medium.	NRA	£60k.	Subject to a regionwide priority based development plan.					Provision of an automatic monitor on the Louth Canal will improve the availability of water quality data which will be used to identify future improvement requirements. Regional strategy awaited.	Cleaner water and greater protection to Public Water Supply.
5. Saltwater intrusion in the Grayfleet Drain/South Dyke system causing water quality deterioration.	Medium.	NRA/ Angling Associations	Dependant on actions taken. Estimate £50-£100k.		*	▲		A number of options are available to overcome this problem including physical barriers, improving freshwater flow, operation of sea doors and provision of pumping station.	Cleaner water. Fishermen. Flora & Fauna.	

* = Feasibility Study/Appraisal Period ▲ = Work on Site

WATER QUALITY Continued

ISSUES	PRIORITY H/M/L	RESPONSIBILITY	ESTIMATED COST	ACTION PERIOD 93/94 94/95 95/96 96-	DETAILS	BENEFICIARIES/ BENEFIT
6. Lower Great Eau - salt water intrusion, causes water quality problems.	Low.	NRA/ Angling Associations.	£200k.	* ▲	Minimising the degree to which salt water intrusion occurs will mean the provision of a permanent structure upstream of the sea doors.	Cleaner water. Fishermen. Flora & Fauna.
7. Minimum flows are inadequate in dry periods to prevent saline intrusion in the lower reaches of rivers.	Medium.	NRA/ Angling Associations.	£250k.	* ▲	NRA to proceed with improved controls for Louth Canal and Great Eau. Other schemes to be assessed. Requires evaluation of options, costs/benefits.	More water. Cleaner water. Fishermen. Flora & Fauna.
8. Woldgrift Drain - water quality is not capable of supporting a coarse fishery.	Medium.	NRA/AWS	To be evaluated, dependant on action taken.	* ▲ ▲ ▲	Recent improvement works made to Mablethorpe STW should result in the Woldgrift Drain being able to sustain a coarse fishery in the near future.	Cleaner water. Fishermen. Flora & Fauna.
9. Upper Great Eau - water quality is not capable of supporting a breeding population of trout.	Medium.	NRA/ Trout Farm.	Determined by degree of improve- ment required.	* ▲ ▲	Improvements in water quality may be achieved by requiring improvements to be made in the quality of the discharge made by a local Trout Farm.	Cleaner water. Fishermen. Flora & Fauna.
10. River Steeping - failure to achieve NWC classification 1B.	Low.	NRA	£30-£50k.	* * * ▲	Increased monitoring of the River Steeping is required to fully explain the reason(s) for the failure to achieve NWC classification 1B. Action can then be taken to improve water quality.	Cleaner water. Fishermen. Flora & Fauna.
11. Nitrate vulnerable zones will be designated under the EC Nitrate Directive.	High.	NRA/ Landowners.	To be evaluated.	Depends on enactment of relevant EC Directive.	Some areas in the catchment may be designated vulnerable zones and changes in land use practice may therefore have to be considered.	Public Water Supplies. Improved Water Quality. Long Term Benefit to ecology.
12. Statutory Water Quality Objectives Consultation Paper to be provided under separate cover in line with approved format.						
13. Provision of additional monitoring data to determine the impact of waste disposal activity in the catchment.	Medium.	Waste Regulatory Authority/ Landfill Site Operator.	£10K - £1m Site specific.	* * * ▲	Cost of monitoring landfill sites will increase.	Cleaner water. Groundwater Protection. General Public.

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WATER RESOURCES

Groundwater and surface water is abstracted in the catchment for public water supply, private use, industry and agriculture. Public water supply is the main user accounting for 98% of all water abstracted in the catchment.

A particular characteristic of the catchment is the 231 private groundwater sources licensed for domestic supply. Anglian Water has 15 licensed groundwater sources.

The principal abstractor of surface water is Anglian Water through the Great Eau scheme. Surface water is also abstracted for agricultural use including spray irrigation but this accounts for less than 2% of the total water used in the catchment.

Whilst surplus surface water is available in the winter very little surplus summer surface water is available. Groundwater resources are substantially committed.

The principal resource issue in the catchment is the over-commitment of the chalk resource. Future water demands to be met principally via Trent Witham Ancholme Scheme (TWAS).

The NRA controls the amount of water abstracted to avoid over-abstraction and hence sustain environmental uses and preserve the ecology of rivers and streams.

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14. Available water resources are inadequate to meet current PWS demand from chalk aquifer.	High.	NRA/AWS	£750K plus AWS costs.	* ▲ ▲	Reduce licensed abstraction and develop surface water scheme (TWAS). No further groundwater development.	Uses of abstracted Groundwater. Increased reliability. General Public.
15. Available water resources in the catchment are inadequate to meet future PWS demands.	Medium.	NRA/AWS	circa £1million.		* Develop surface water scheme (TWAS). Subject to full Project Appraisal.	Increased availability to all abstractors. General public.
16. Available water resources in the catchment are inadequate to meet future industrial demands.	Medium.	AWS	Included in Issue 15 as negotiated between industry and AWS.		* Meet demand from Public Water Supply.	Water abstractors. Reliable water supply. Industry. Public.
17. Cannot reliably meet demand for spray irrigation in summer months.	Medium.	Farmers	£100k p.a.	▲ ▲ ▲ ▲	Farmers to provide winter storage.	Farmers. River Environment. Reliable water supply.
18. Lack of understanding the workings of groundwater south of Louth.	Medium.	NRA	£100k.		* Carry out groundwater investigation Subject to full Project Appraisal.	All water users. Aquifer protection.
19. Over-abstraction from chalk aquifer leading to depleted spring flows.	High.	NRA/AWS	£50-£250k.	* ▲ ▲ ▲	Reduced licenced abstraction No further groundwater development Resolve flow problems.	All water users. Aquifer protection. Riverine environment.
20. Actual minimum flows are inadequate in middle upper reaches of many and rivers to meet in-river needs.					* Investigate minimum acceptable flows Options to resolve subject to full Project Appraisal.	Anglers/ Conservationists. Improved environmental flows. River users.
21. Minimum river levels in the Louth Canal in the Covenham to Alvingham stretch are inadequate to meet in-river needs.	Low.	NRA	£50k.		* Investigate minimum acceptable levels. Options to resolve subject to full Project Appraisal.	Anglers. Improved water depths.

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LAND USE

The catchment is predominantly rural with populations centred in a number of towns and villages. Farming is mainly arable with limited grazing on the poorer soils.

The population of the catchment is 88000 with over 40000 of the population centred on Louth, Skegness,

Mablethorpe and Sutton.

Industry is limited. During the summer season there is a thriving tourist industry. The population of the catchment can increase by 150000 during the peak holiday season with an additional 33000 day visitors.

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22. Development impacts upon the water environment.	High.	NRA/Local Authorities/Developers/Landowners.	Costs dependent on severity of development impact.	▲	▲	▲	▲	Land use changes affect NRA operational and statutory responsibilities. Direct consideration of NRA aims and policies to be taken into account when planning future land use change and when considering specific development proposals.	Water quality. River users. Conservation. Land Drainage. Anglers.

CONSERVATION

The coastline of the catchment falls between two recognised internationally important wildfowl and wader wintering sites, namely the Humber and the Wash. This coastline is therefore important and includes an RSPB reserve at Tetney and a National Nature Reserve (NNR) at Saltfleet.

There are many varied and valuable ranges of habitat,

notably the Waithe Beck, the River Lymn and the Upper Great Eau and Long Eau. There are wetland sites and several spring sites which contain notable species.

The NRA in carrying out all its functions and in dealing with proposals by others, will further the conservation of flora, fauna, landscape and archaeology.

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23. Seven rivers identified for instream and bankside increased habitat diversity.	High.	NRA IDB	Equivalent to 5% per annum of flood defence capital and maintenance expenditure.	▲	▲	▲	▲	Habitat enhancement without the loss of channel capacity to occur on the Grayfleet Drain, South Dyke, Long Eau, Great Eau, Woldgrift Drain, Boygrift Drain and the Willoughby High Drain. The work to be undertaken as part of routine flood defence maintenance and as specific capital projects.	Increased habitat diversity. General Public. Fishermen. Conservation Groups. Landowners.

FISHERIES

The rivers support a mixture of coarse (108 Km) and game (83 Km) fisheries. The Waithe Beck and the River

Steeping are important fisheries and contain a healthy fish population.

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24. Great Eau -impediments to the passage of migratory fish.	Medium.	NRA and Salmon and Trout Association.	£70k.	*	▲	▲	▲	Initially commission a study into the feasibility of constructing fish passes and the creation of suitable spawning gravel sites.	Increased fish diversity. Fishermen. General Public. Landowners.

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FLOOD DEFENCE

NRA flood defences stop the freshwater from the higher ground spilling out into the low lying coastal strip and prevent the sea gaining access to the land. There are nearly 114 Km of embanked watercourses and 62 Km of sea defence.

The last major flood occurred in 1953 when 41 people drowned and many houses were destroyed.

The NRA maintains and replaces the defences and provides a flood warning service to ensure the safety of those living in the flood risk areas.

The NRA will shortly embark on a major beach recharge project to provide further protection to this vulnerable coastline.

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25. Maintaining adequate outfalls at river havens to facilitate flushing of the channel.	High.	NRA	£50k per annum.	▲	▲	▲	▲	Siltation of tidal outfalls continues, regular dredging has to be carried out.	Adequate Flood Protection. Farmers. Public.
26. Linschore '97 Sea Defence Improvement Scheme - Beach Nourishment.	High.	NRA	£45m.	*	▲	▲	▲	Due to continually lowering beach levels, severe storm surges and deterioration of existing sea defences, coastal protection works are required. Beach nourishment is the most appropriate solution.	Sound and secure sea defences. High sandy beaches. Public. Industry. Commerce. Holiday-makers.

NAVIGATION

No statutory navigation exists within the catchment, however, ancient navigation of the Louth Canal and at Wainfleet have both fallen into disuse. The scope for sailing and boating on the rivers is limited because of the

narrowness of the river channels and the height of banks restricting access. On the tidal waters there are a number of sailing clubs.

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27. To restore the Louth Canal as a fully operational navigation.	Low.	Louth Navigation Trust/NRA	circa £7m.				*	The Louth Navigation Trust's aim is to restore the navigable waterway. Considerable conflicts with other river users exist. Substantial expenditure would be required to overcome these difficulties. Feasibility study required but is dependent on necessary funding being provided by all interested parties.	Navigable waterway. Amenity. Boaters. Fishermen. Public.

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FUTURE REVIEW AND MONITORING PROGRAMME

The NRA will be jointly responsible, with other identified organisations and individuals, for implementing this Final Plan. Annual monitoring reports to record progress in fulfilling the Plan will be produced by the NRA and distributed to interested

parties. These reports will comment on the necessity to formally review and update the Catchment Management Plan. The period before an update is necessary will depend upon the particular needs of the Catchment but will not be longer than 5 years.

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 each one mirroring an area(s) served by a former regional water authority.

The main functions of the NRA are:

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

ENVIRONMENT AGENCY



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