

BEDFORD OUSE (LOWER REACHES) CATCHMENT MANAGEMENT PLAN ACTION PLAN



NRA
*National Rivers Authority
Anglian Region*
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INTRODUCTION

Established in 1989 the National Rivers Authority has as its role the "Guardians of the Water Environment". As such it is committed to protecting and improving the water environment in its broadest sense. Establishing a sound planning base for the development of river catchments is essential to our future management.

To assist in its work, the NRA has developed the concept of Catchment Management Plans. These allow the full range of water management issues to be identified and considered within a geographical area which is relevant and meaningful. By using public consultation they will allow input from others and provide commitment from all parties to achieving action in important issues.

The NRA's vision for the Bedford Ouse (Lower Reaches) catchment is of a healthy and diverse water environment, managed in an environmentally sustainable way, balancing the needs of all users. Where significant environmental damage might occur but knowledge is incomplete, the NRA will adopt the principles of sustainable development and exercise a precautionary approach.

To achieve this vision, the NRA must work with or seek to influence central government, local government, industry, commerce, farming, environmental organisations, riparian owners and the general public. Successful management of the water environment requires consideration of a wide range of interests and requirements which may sometimes be in conflict. The competing requirements and interests of users and beneficiaries must be balanced.

OVERVIEW

The Authority published the Bedford Ouse (Lower Reaches) Catchment Management Plan in April 1994 as a consultation document seeking comment from all those interested in the water environment. As a result of the consultation process we are now able to publish the Bedford Ouse (Lower Reaches) Catchment Action Plan for the five years beginning April 1995.

Comments on the Consultation Draft were received from the following organisations:

North Hertfordshire District Council, Bedford Borough Council, Herts and Middlesex Wildlife Trust, Great Ouse Boat Builders and Operators Association, Inland Waterways Association, MAFF, Huntingdon District Council, Council for the Protection of Rural England, English Heritage, Anglian Water Services PLC, Mid Bedfordshire District Council, Eastern Council for Sport and Recreation, Ivel Valley Countryside Project, English Nature, Bedfordshire County Council, Three Valleys Water PLC, Great Ouse Boating Association, and the Royal Society for the Protection of Birds

The Action Plan includes and reflects many of the comments received from the listed organisations. The Action Plan will be monitored on an annual basis to report on progress against the identified actions. Each catchment plan will be reviewed every 5 years.

INTEGRATING LAND USE AND WATER MANAGEMENT

Sustainable development is at the heart of international and UK policy on the environment. The role of the NRA in supporting these principles is to ensure that decisions throughout society are taken with proper regard to their impact on the water environment.

Agenda 21, the international blueprint for sustainable development, identifies the need for an integrated approach to the management of land and water resources. The purpose of this section is to highlight issues that local planning authorities and others involved in the management of the countryside need to consider and respond to if the water environment is to be managed in a sustainable way.

Government planning guidance states the importance of communication between local planning authorities and the NRA and the relationship between land use and water matters. It is just as important that contact is maintained with other agencies whose policies and actions impinge on the water environment.

The NRA will encourage all relevant land use policy and strategy documents to reflect the range of issues as outlined in the NRA "Guidance notes for Local Planning Authorities on Methods of Protecting the Water Environment through Development Plans". These issues will be discussed with local planning authorities and other organisations who can contribute to their implementation.

CATCHMENT FACTS

CATCHMENT DETAILS

Area 1556 sq km

Population	Existing (1993)	Predicted(2006)
	421,734	477,000

Minimum Ground Level	2m AOD
Maximum Ground Level	184m AOD

Geology	North	- Clays with overlying gravels along rivers
	Central	- Clays with Greensand outcrop in east
	South	- Chalk, Gault clay and Greensand

ADMINISTRATIVE DETAILS

		% of catchment area
County Council	Bedfordshire	47
	Cambridgeshire	40
	Northamptonshire	3
	Hertfordshire	10
District & Borough Councils	East Northamptonshire DC	
	Huntingdonshire DC	
	Mid Bedfordshire DC	
	Bedford Borough Council	
	North Hertfordshire DC	
	South Bedfordshire DC	
	South Cambridgeshire DC Stevenage DC	

National Rivers Authority Anglian Region - Central Area
Catchment (South) (Bedford)

		% of Catchment
Water Supply Companies	Anglian Water Services Limited	77
	Cambridge Water Company	12
	Three Valleys Water Company	11

Major Sewage Treatment Works
Bedford
Chalton
Hitchin
Huntingdon

Internal Drainage Boards
Alconbury & Ellington,
Bedfordshire & Ivel, Bluntisham,
Houghton & Wyton, Over &
Willingham, Swavesey

Main Towns and Populations		
Bedford	73,655	
Letchworth	32,356	
Hitchin	29,563	
St Neots	25,620	
Huntingdon	15,744	
St Ives	15,622	
Biggleswade	13,206	
Flitwick	10,828	

Water Quality - Length of river in National Water Council (NWC) Class for 1992

Class	Km	Class	Km
1A (Very Good)	0.0	3 (poor)	5.6
1B (good)	165.0	4 (bad)	0.0
2 (fair)	77.2		

Availability of Water Resources

Chalk aquifer	None
Lower Greensand	None
Oolite	None
River gravels	Limited availability
Surface water	Limited availability winter preferred

Length of statutory main river	221km
Embanked main river	32km
Area protected by embanked channel	34.2km ²
Area of natural flood plain	59.7 km ²
Length of navigable river	66.2km
Length of game (trout) fisheries	0
Length of coarse fisheries	190km
Sites of Special Scientific Interest (SSSI's)	53
Water Dependent SSSI's	31(included in above)
County Wildlife Sites	31 (including 4 SSSI's)
Scheduled Ancient Monuments	136

THE CATCHMENT

The Bedford Ouse (Lower Reaches) Catchment, comprises that part of the River Great Ouse (together with its tributaries) between Kempston and Earith. The River upstream of Earith is also known as the Bedford Ouse. The Catchment is 1556 sq km which includes a diversity of landscape.

The Bedford Ouse flows generally in a north easterly direction. The rivers flow over a clay covered catchment, apart from the Hiz, Flit and Upper Ivel, which flow over the Chalk and Greensand rocks. Rainfall is less able to



penetrate through the clays so tends to run over the surface. This means that when the land surface is saturated the rivers respond rapidly to rainfall and high river flows may occur.

Flows in the Bedford Ouse, and tributaries feeding into it, upstream of Bedford will be discussed in the Bedford Ouse (Upper Reaches) Catchment Management Plan. The Bedford Ouse discharges to either the Hundred Foot River or to a lesser extent the Old Bedford River at Earith. Flows in the Hundred Foot River and Old Bedford River are discharged to sea via the Tidal River, which will be discussed in the North West Norfolk Catchment Management Plan. At times of high flow, flood waters can be diverted to the flood storage area known as the Ouse Washes.

The Ouse Washes are a Site of Special Scientific Interest (SSSI) with particular interest as wildfowl feeding and breeding grounds. They have particular needs in terms of the water regime which will be covered in the Old Bedford River Catchment Management Plan.

The maximum elevation within the catchment is 184m above sea level and is to be found in the Chalk outcrop area south west of Hitchin. The Bedford area is 25 to 50m above sea level, with areas in the upper reaches of the sub-catchments being around 100m above sea level. The lowest lying land is close to sea level at Earith, Cambridgeshire.

The responsibility for NRA operations in the catchment is that of the Area Manager for Central Area of the Anglian Region.

CURRENT SITUATION AND PLANNED ACTIONS

A key to the various abbreviations is available at the back of this document.

Water Quality - Surfacewater

The majority of rivers in this catchment are of good or fair quality. In the more urbanised southern areas there are stretches of poor quality. The main River Ouse is good quality throughout most of this catchment, the exception being a stretch immediately downstream of Bedford where there is a deterioration in quality.

The most important point for the protection of surface water quality is at Offord on the Bedford Ouse where water is abstracted for storage in the Grafham Water reservoir. Grafham has been affected by algal blooms which are influenced by the nutrient levels in the abstracted river water. Sewage treatment works are the major source of pollutant loads in the catchment. Most trade effluent discharges are made to the public foul sewer for treatment.

The officer responsible for all water quality, both ground and surface, is the Area Water Quality Manager.

ISSUES	PRIORITY H/M/L	RESPONSIBILITY	ESTIMATED COST £	ACTION PERIOD 95/6 96/7 97/8 98/9 99/00	DETAILS	BENEFITS
1. Impact of Unsewered Villages - River Kym, Alconbury Brook and Ellington Brook Catchments	Medium	NRA/AWS/ District Council	n/a	● ●	Need to survey unsewered villages to establish effect on water quality of septic tank overflows. The only effective means of solving the problem is for the installation of first-time sewage schemes.	Provide information for decision making and improved water quality.
2. Alconbury Brook: Headwaters to Ellington Brook - Failure to meet REC 4 Target for BOD and DO	Low	NRA	n/a	● ●	Poor water quality during low flow summer period and investigate cause of low DO and high BOD.	Provide information for decision making and improved water quality.
3. River Til/River Kym: Headwaters to Bedford Ouse - Failure to meet RQO's	Medium	NRA	n/a	● ● ● ●	Investigate cause of low DO, high BOD, NH, during low flow summer period and the impact of the impoundments in Kimbolton.	Provide information for decision making and improved water quality.
4. Impact on Kimbolton STW on River Kym - Failure to meet REC 3 target	Medium	NRA/AWS	*	■ ■ ■	Achieved by improvements to the STW. A feasibility study is needed to identify the best options.	Improved water quality and Improved flora and fauna.

* Cost will vary depending on the action taken. n/a Cost currently not available either undetermined or dependent upon future work.
 ■ Period for feasibility study/project appraisal. ● Period of actual work on site or action being undertaken.

ISSUES	PRIORITY H/M/L	RESPONSIBILITY	ESTIMATED COST £	ACTION PERIOD 95/6 96/7 97/8 98/9 99/00	DETAILS	BENEFITS
5. Brompton Brook: Buckden Waste Disposal Site to Bedford Ouse - Failure to meet RQO's for BOD, NH, and DO	High	Waste disposal site operator	n/a	● ●	A treatment plant was constructed in 1994 to treat the leachate from the site. Continue to review impact of Brompton STW.	Improved water quality and Improved flora and fauna.
6. Impact of Marston Moretaine STW on Marston Brook - Failure to meet REC 4 target	Low	NRA/AWS	*	■ ● ● ●	Further investigation of the impact of the STW is required. Future improvements in effluent quality will be subject to National agreements with AWS/OFWAT.	Improved water quality and Improved flora and fauna.
7. Marston Brook/ Elstow Brook: Stewartby Lake outfall to Wootton Brook - Failure to meet REC 3 target for Ammonia	Medium	NRA	*	■ ●	Investigate occurrence of high ammonia to establish the source.	Improved water quality and Improved flora and fauna.
8. Millbridge/Common Brook: Gamlingay to River Ivel - Failure to meet REC 3 target for DO, total and un-ionised NH ₃	Medium	NRA	n/a	● ● ● ●	Improve monitoring and survey to investigate any unauthorised discharges.	Improved water quality and Improved flora and fauna.
9. Steppingley Brook: Station Road, Ampthill to River Flit - Failure to meet REC 4 for Ammonia	Medium	NRA/AWS	*	● ● ●	Further investigation of the quality and quantity of water upstream of Flitwick STW is required. Expenditure on STW improvements will be subject to National agreements with AWS/OFWAT.	Improved water quality and Improved flora and fauna.
10. Hen Brook - Failure to meet RQO's and poor Biological Quality	Low	NRA/AWS	n/a	■ ● ●	Undertake pollution prevention visits at industrial areas in St Neats to investigate impact of surface water sewers.	Improved water quality and Improved flora and fauna.
11. Impact of Barton-Le-Clay STW on Barton Brook - Failure to meet REC 3 target	Low	NRA/AWS	*	● ● ● ● ●	Recent improvements to the STW should result in improvements. Continued monitoring is required to ensure compliance with water quality targets.	Improved water quality and Improved flora and fauna.
12. Pix Brook: Headwaters to River Ivel - Failure to meet REC 4 for BOD upstream and total NH ₃ downstream of Letchworth STW and poor Biological Quality	Medium	NRA/AWS	n/a	● ●	Survey with AWS to monitor surface water discharges and establish the impact of industrial area. Pollution prevention visits required.	Improved water quality and Improved flora and fauna.

* Cost will vary depending on the action taken.

● Period of actual work on site or action being undertaken

n/a Cost currently not available either undetermined or dependent upon future work .

■ Period for feasibility study/project appraisal.

ISSUES	PRIORITY H/M/L	RESPONSIBILITY	ESTIMATED COST £	ACTION PERIOD 95/6 96/7 97/8 98/9 99/00	DETAILS	BENEFITS
13. Impact of Storm Sewage overflows and Surface Water Discharges	Medium	NRA/AWS	n/a	■ ● ● ● ●	Identify significant discharges and monitor.	Improved water quality and improved flora and fauna.
14. Ministry of Defence bases	Low	NRA/MOD	*	● ● ● ● ●	Continue to establish a close liaison with MOD sites and survey current pollution risks. Improve STW's to ensure compliance with standards required and improve pollution control practices	Improved water quality and improved flora and fauna. Protection of groundwater quality.
15. Landfill sites - Marston Vale	Medium	NRA/Waste Regulation Authorities	n/a	■ ■ ■ ■ ■	Consultation to ensure regulation of future developments and waste disposal operations.	Protection of groundwater quality.
Flitwick	Medium	Site Operator	n/a	● ●	Containment of leachate under the site. Remedial measures taken to allow site to be reinstated, sealed and developed.	Improvement in groundwater quality and reduced potential for further pollution.
16. Eutrophication	High	NRA/DOE/AWS	>300k p.a.	■ ■ ● ● ●	Continued review of nutrient data, undertake investigation of algae and aquatic plant communities is needed for the eutrophic status of designated Sensitive Area. Develop programme for nutrient reduction, possibly at STW under EC UWWTD.	Improved water quality and improved flora and fauna. Potential reduction of algal blooms in Grafham Water.
17. Blue green algae	High	NRA/AWS/ Lake Owners	*	■ ■ ● ● ●	Research programme to produce Action Plans to advise on management strategies to control blooms is underway. Continue reactive sampling. Phosphate Control at STW for compliance with the UWWTD may help to reduce the frequency of blooms.	Protection of water users.

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Water Quality - Groundwater

The three major aquifers in the catchment are the Chalk, the Lower Greensand and the River Gravels.

Chalk is a strategically vital source of water supply, which benefits from a high quality requiring minimal treatment prior to use; however it is susceptible to pollution which is very difficult to clean up. Generally the quality of groundwater in the Chalk aquifer is excellent, but there are areas where nitrate levels are increasing. As a result of this the NRA is involved in the designation of Nitrate Sensitive Areas (e.g proposed NSA at Slip End). Careful land use management may be required in future to ensure that nitrate levels remain below the maximum allowable concentrations of 50 milligrams of nitrate per litre of water. Organic solvents,

cause significant local contamination (e.g in the industrial areas around Letchworth and Biggleswade).

The Lower Greensand aquifer is used for industrial and potable supplies. The water is less hard than the Chalk and generally has a much lower nitrate concentration. This low nitrate status makes it particularly important as often it can be blended with chalk waters to enable compliance with drinking water standards.

The river gravel aquifers provide industrial and potable supplies and current quality is within acceptable guidelines. However, they are generally in continuity with surface waters and prone to pollution.

The officer responsible for all water quality, both ground and surface, is the Area Water Quality Manager.

ISSUES	PRIORITY H/M/L	RESPONSIBILITY	ESTIMATED COST £	ACTION PERIOD 95/6 96/7 97/8 98/9 99/00	DETAILS	BENEFITS
18. Nitrate sensitive areas	Medium	MAFF/NRA/ Farmers	n/a	■ ● ● ● ●	Continued monitoring, modelling of data on nitrate levels. Increased publicity reduces pollution risks from nitrate usage.	Reduction of nitrate in groundwater.
19. Groundwater contamination: Baldock Road, Letchworth.	High	NRA Three Valleys Water Industry	n/a	■ ■ ■ ■ ■	Investigate sources of solvent contamination and continued monitoring combined with pollution prevention visits on industrial estate. Contaminated land investigation and remediation on areas of contaminated land.	Reduced levels of pollution in groundwater which reduces treatment costs to TVWC & Biggleswade.

n/a Cost currently not available either undetermined or dependent upon future work.

■ Period for feasibility study/project appraisal. ● Period of actual work on site or action being undertaken.

Water Resources

Where there are valid requirements for water abstraction and competition arises with other river uses, there is a need to strike a balance between the various interests to secure an optimum development of resources. This must be undertaken within a framework to satisfy proper protection of the natural environment.

There is an existing high demand for water use for drinking water, industry and agriculture and this demand is increasing. Future development must not cause any unacceptable detriment to the environment.

It is important to remember that as the population of the area continues to increase, so will the volume of water returned to the rivers through discharges from the sewage treatment works. Therefore as dry weather flows increase, there may be some future flexibility in the allocation of summer surface resources.

The major abstraction in the catchment is from the Bedford Ouse, just upstream of Offord village to fill Grafham Water Reservoir for public water supply. Any allocation of resources upstream can only be granted subject to protecting this existing abstraction and the needs of the river.

The groundwater reserves in this area are the Chalk and Lower Greensand aquifers in the southern part of the catchment. Recharge of the chalk occurs over the whole of its area and groundwater flows are generally towards the north. Water flows out of the aquifer at discrete springs or gradually along the River Hiz, Flit, Upper Ivel and their tributaries. Recharge of the Lower Greensand aquifer is impeded by the Gault Clay, resulting in recharge occurring only where the aquifer outcrops. The Greensand forms a south-west to north-east trending resistant ridge, with groundwater flow being generally to the south east.

The current assessment for these areas shows that resources are fully committed, groundwater is not available for abstraction from the major Chalk and Greensand aquifers in the catchment. Groundwater is only available for abstraction from river and glacial sands and gravels for minor local needs. There is some groundwater available from river and glacial sands and gravels along the main river corridors.

The officer responsible for all water resources, both ground and surface, is the Area Water Resources Manager.

ISSUES	PRIORITY H/M/L	RESPONSIBILITY	ESTIMATED COST £	ACTION PERIOD 95/6 96/7 97/8 98/9 99/00	DETAILS	BENEFITS
20. Future demand for abstraction cannot be met from surface water	Medium	Licence Holder/ NRA	*	● ● ● ● ●	Effective demand management such as leakage control by PWS and industry.	Increased availability of water without new supplies being developed.
	Medium	NRA/ Licence Holders	100 k p.a	● ● ● ● ●	Increase use of winter stored water Increased availability of water without new supplies being developed.	Reduce pressure on summer resources. Potential to create conservation habitat.

* Cost will vary depending on the action taken. ■ Period for feasibility study/project appraisal. ● Period of actual work on site or action being undertaken.

ISSUES	PRIORITY H/M/L	RESPONSIBILITY	ESTIMATED COST £	ACTION PERIOD 95/6 96/7 97/8 98/9 99/00	DETAILS	BENEFITS
20. Continued	Low	NRA/PWS	*	No action is planned during this time scale.	Feasibility study completed for options such as transfer of supplies from R. Trent, canal system, the reduction of the Offord MRF and the construction of the Brownhill Tunnel. These were considered as part of the Regional Water Resources Strategy published in September 1994 and are not considered necessary in this timescale.	The necessary Water Resources Strategy has been completed and priorities have been established.
21. Future demand for abstraction cannot be met from existing groundwater sources	Medium	NRA	97.5k	■ ■ ■ ■ ■	Re-evaluation of groundwater resource allocation to the environment.	May yield additional water in some aquifers. Enable more accurate resource planning. In some areas the allocation may increase long-term availability.
22. Improve availability of summer resources for the Middle Level drainage area	Medium	NRA	< 88k	■ ●	Earth Transfer: Improve reliability by lowering cessation level.	Minimal cost for greater reliability for irrigation abstraction in Middle Level, less pressure on River Nene resources.
23. "In-River Needs" are not quantified and Minimum Acceptable Flows need to be defined	Low	NRA	n/a	No action is planned during this time scale. Projects in other catchments have higher priority.	Carry out extensive ecological studies throughout the catchment.	Protects in-river ecology. Improved resource management. Verification of water resource availability. Satisfies local requirements.
24. Catchment areas for wetland and washland sites of conservation value need to be defined	Low	NRA	n/a	No action is planned during this time scale. Projects in other catchments have higher priority.	Carry out hydrological, hydrogeological and ecological studies.	Provide effective protection of existing sites. Improves water resource management.
25. Re-evaluation of the groundwater resources allocated to the environment	Low	NRA	n/a	No action is planned during this time scale. Projects in other catchments have higher priority.	Carry out extensive ecological hydrological and hydrogeological studies throughout the catchment.	Improved resource management. Verification of water resource availability. Satisfies legal requirements.
26. River support and alleviation of low flows in the River Hiz	High	NRA	1.17 Million	■ ●	Surveys have been completed in 1994 to assess the extent of low flow problems and to establish the required "flow" regime. It is aimed to install a river support scheme using bareholes.	Will provide additional flow in river. Enable NRA to manage resources.

* Cost will vary depending on the action taken.
 ■ Period for feasibility study/project appraisal.

n/a Cost currently not available either undetermined or dependent upon future work.
 ● Period of actual work on site or action being undertaken.

Environmental Features - Fisheries

Some 29 species of fish have been recorded by NRA within the catchment, and many of the main river and some of the non-main river reaches support good fish populations. Many of these reaches also support valuable coarse fisheries.

Migratory salmonid species, notably sea trout, brown trout and occasionally salmon have been recorded in the catchment.

The officer responsible for all Fisheries is the Area Fisheries, Recreation, Conservation and Navigation Manager.

ISSUES	PRIORITY H/M/L	RESPONSIBILITY	ESTIMATED COST £	ACTION PERIOD					DETAILS	BENEFITS
				95/6	96/7	97/8	98/9	99/00		
27. Habitat improvements to tributaries and back channels of Bedford Ouse	High	NRA	23k	●	●	●	●	●	Improve instream riffle recharge, current deflectors and improved margins.	Improve fish stocks by providing better habitat for spawning and feeding.
28. Restoration of Bedford Ouse dace populations	High	NRA	5k	●					Rehabilitation of the dace population in the Bedford Ouse Rivers which had declined as a result of drought years.	Maintenance of species diversity and increased angling potential.
29. Enhancement of the barbel population	High	NRA	2k	●					To increase the distribution of barbel within this catchment by re-stocking into areas of weir pools and fast flowing back channels.	Enhance species diversity and re-establish populations of this popular angling species.
30. Creation of off-river refuge areas between St Ives and Earith	Medium	NRA	20k		●	●			The quality of the fishery between St Ives and Earith is linked to poor marginal cover and a lack of backwaters. Creation of off-river refuge areas should help enhance production and provide shelter in flood conditions.	Long term improvement in fishery by providing better spawning and flood flow refuges.
31. Provision of fish passes	Medium/ Low	NRA	*	●	●	●	●	●	Consideration should be given to the provision of fish passes to any structures undergoing major refurbishment.	Enhance the successful run of migratory species such as sea trout and eels.

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Environmental Features - Recreation

There is an increasing demand for public access to the countryside for various forms of informal recreation. The need is for increased circular and linear footpaths, bridle paths and more recently for cycle paths. In collaboration with others, NRA will support sensitive improvements in public access adjacent to and within the river corridor.

There is a demand for increased access to the River Ivel by canoe users.

Access for the anglers with disabilities and in some instances, for able bodied anglers, presents difficulties within this catchment. A review of facilities is therefore required.

The officer responsible for all Recreation is the Area Fisheries, Recreation, Conservation and Navigation Manager.

ISSUES	PRIORITY H/M/L	RESPONSIBILITY	ESTIMATED COST £	ACTION PERIOD 95/6 96/7 97/8 98/9 99/00	DETAILS	BENEFITS
32. Improved canoe portage facilities around navigation structure	Medium/high	NRA	12k	● ● ● ●	To carry out works that will ease the handling of canoes around navigation structures improving the service provided by the NRA where they are the statutory navigation authority.	Improving facilities for licence paying canoeists.
33. Creation of an area for fishing by anglers with disabilities	High	NRA/ Local Authority	6k	● ●	To create an area in which organised angling such as a small fishing match could be undertaken by disabled anglers. To generally improve/ease access to NRA owned land.	Improved public access to riverside recreational activities in line with NRA Recreation Strategy.
34. Demand for wider access to the countryside	High	NRA	9k	● ● ●	To work in conjunction with others on collaborative projects to improve public access to water based recreational activities such as footpaths, bridleways and cycle tracks.	Improved public access to riverside recreational activities in line with NRA Recreation Strategy.
35. Development of interpretation boards and centres around water-based recreational areas	Low	NRA	5k	● ●	Construction of interpretation boards to provide general public with useful information to enlighten them as to the wildlife and historical areas of interest and the NRA's involvement in these.	Better public information on NRA's activities and the water environment.
36. Creation of safe stable fishing platforms in liaison with angling clubs	High	NRA/ Angling Clubs		● ● ● ● ●	Advise and guide clubs on standard method and designs of construction by them of angling platforms.	Reduced flood defence risk and compliance with NRA byelaws. Reduced disturbance to other areas of bank and bankside vegetation.

● Period of actual work on site or action being undertaken.

Environmental Features - Conservation

It is recognised that the environmental value of certain channels have been adversely affected by past land drainage activities, both fisheries and general conservation value would be improved by appropriate habitat enhancement or restoration.

In rivers plant growth is an important habitat feature, weed control for flood defence and navigation requires careful balance with environmental needs. It is therefore

appropriate to review weed control practices to ensure the correct balance is achieved to satisfy all uses.

Riverside trees are an integral part of the Bedford Ouse landscape, the replacement of trees lost by natural attrition therefore needs to be addressed if this traditional lowland river landscape is to be maintained.

The officer responsible for Conservation is the Area Fisheries, Recreation, Conservation and Navigation Manager.

ISSUES	PRIORITY H/M/L	RESPONSIBILITY	ESTIMATED COST £	ACTION PERIOD 95/6 96/7 97/8 98/9 99/00	DETAILS	BENEFITS
37 River restoration	High	NRA	20k	● ● ● ●	River restoration by proactive conservation projects or during flood defence maintenance works. Improvements to both in-stream and bankside habitats.	Increased habitat diversity with consequent increase in flora and fauna diversity.

● Period of actual work on site or action being undertaken.

ISSUES	PRIORITY H/M/L	RESPONSIBILITY	ESTIMATED COST £	ACTION PERIOD					DETAILS	BENEFITS
				95/6	96/7	97/8	98/9	99/00		
38. Degradation of the traditional lowland landscape	Medium	NRA/EN/MAFF, Wildlife Trusts, Riparian Owners, District Council, County Council	20k	●	●	●	●		Collaborative work involving diverse projects recreating grassland, flood meadows and the management of riverside trees.	The creation and management of sustainable habitats, improved landscape and improved conservation value of the river corridor.
39. Examination of the weed control regime	High	NRA	*	●					Examine and if necessary modify the weedcutting regime to minimise environmental damage and maximise benefits.	Minimise environmental disruption, manage to benefit conservation.

* Cost will vary depending on the action taken. ■ Period for feasibility study/project appraisal. ● Period of actual work on site or action being undertaken.

Navigation

Congestion at certain locks is a common feature on the Bedford Ouse during the summer period. A survey is therefore required to assess lock capacity, waiting times, and appropriate mitigations if required to meet an acceptable level of service.

There is an ongoing programme of lock improvements, both to enlarge lock pens and to automate manually

operated structures.

The River Ivel was used for navigation for part of its length and it has been suggested by boat owners that the navigation should be re-established.

The officer responsible for Navigation is the Area Fisheries, Recreation, Conservation and Navigation Manager.

ISSUES	PRIORITY H/M/L	RESPONSIBILITY	ESTIMATED COST £	ACTION PERIOD					DETAILS	BENEFITS
				95/6	96/7	97/8	98/9	99/00		
40. Boat traffic congestion at locks during the summer period	Medium	NRA	150k	●	●	●			Lock automation, lock pen enlargement and co-operation with local authorities to achieve development of moorings.	Improved customer satisfaction. Reduces lockage times.
41. River Ivel navigation reopening	Low	NRA	15k					■	Carry out feasibility study to assess current status of navigation on the river and cost/benefits of improvements.	Improved access to boat users.

■ Period for feasibility study/project appraisal. ● Period of actual work on site or action being undertaken.

Flood Defence

The presence of a flood alleviation scheme does not remove entirely the risk of flooding. Thus schemes which protect urban conurbations to a return period of say 50 years should be considered still to have a medium risk of flooding, whilst a 100 year scheme will present a low risk. In addition, no matter what type of scheme has been implemented, a continuing programme of maintenance will be required to maintain the level of protection. The formal system for assessing compliance with maintenance Standards of Service is not yet in operation as the levels of protection have not been fixed. When this has been achieved, the Authority's maintenance programme will be re-assessed and any necessary changes proposed will be discussed through the normal consultation process.

Both silt and gravel accumulations are of concern in the catchment and both its control and management within the river system needs to be constantly monitored. Dredging and weed control activities which are essential practices for flood defence can impact on the river environment and other uses.

There are increasing number of non-Main River urban flooding difficulties that have been brought to the Authority's attention. The necessary powers to carry out works lie with the Local Authorities but, with reduced levels of available public money, relief for these locations may be seriously delayed. Internal Drainage Boards may also be involved with relief of flooding within their administrative areas.

The officer responsible for all Flood Defence works is the Area Flood Defence Manager.

ISSUES	PRIORITY H/M/L	RESPONSIBILITY	ESTIMATED COST £	ACTION PERIOD 95/6 96/7 97/8 98/9 99/00	DETAILS	BENEFITS	
42. Assessment and execution of Main River works	Depends upon specific project	NRA Riparian Owners Local Authorities	*	■ ■ ■	Assess and execute works in Main River such as refurbishment and rehabilitation of embankments, and structures.	Improved levels of urban flood protection.	
43. Standard of Service for flood protection	High	NRA	n/a	■ ■	To assess the area at risk from flooding, the effective standard of service and the target standard of service.	Improvements in identification of priorities. Utilises resources to best effect.	
44. Brownhill Staunch	High	NRA	235k	● ●	Refurbishment of sluices.	Maintain existing river regime.	
45. Hemingford Flood Bank	Medium	NRA	200k	●	Reprofiling and seepage control.	Improved levels of flood protection.	
46. Houghton Structures	Medium	NRA	277k	● ●	Refurbishment of control weirs.	Maintain existing river regime & levels of flood protection.	
47. Offord spillway modification	Medium	NRA	20k	●	Structure refurbishment to allow increased throughflow.	Improvements to structure discharge capacity.	
48. Bedford town flood defences	Low	NRA	>100k	This work to be undertaken beyond the timeframe of this Plan (2001)		Subject to feasibility study and full appraisal of costs & benefits.	Improved levels of flood protection.
49. Tempsford Sawmills	High	NRA/ Landowner	*	■ ●	Subject to feasibility study.	Maintain existing river regime & levels of flood protection.	
50. River Ivel Embankments	Medium	NRA	335k	■ ● ●	Subject to study of options for refurbishment works.	Maintain existing river regime & levels of flood protection.	
51. Riseley flood protection	Medium	NRA	50k	■	Subject to feasibility study and full appraisal of costs & benefits.	Improved levels of flood protection.	
52. Kimbolton flood protection	High	NRA	50k	■	Subject to feasibility study and full appraisal of costs & benefits.	Improved levels of flood protection.	
53. Non-Main River flood protection	Medium	NRA/IDB/ District Council Riparian Owners	40k	●	Investigate non-main river flooding and implement alleviation works subject to redesignation of non-Main River as Main River.	Improved levels of flood protection.	

* Cost will vary depending on the action taken.

n/a Cost currently not available either undetermined or dependent upon future work.

■ Period for feasibility study/project appraisal.

● Period of actual work on site or action being undertaken.

Development

All towns situated on the river system have areas which have been affected by historic floods. The 1947 flood, in general, is the largest recorded flood and defines the flood plain of statutory main river. The major population centres within the catchment with flood risk areas are Bedford, St Neots, St Ives, Huntingdon, Biggleswade and Shefford.

Flood plain is often under pressure from development. A consequence of flood plain loss is the reduction in flow or storage volume with a resultant rise in flood levels. Since 1947, it is estimated that some 360 ha of flood plain has been lost in the catchment due to development, equating to 6% of the total. The impact of this loss will be greater than the overall percentage figure might suggest in the urban areas where the encroachment has occurred, and where the local effect will be significant.

It is considered that improvements effected to the 'main river' system since 1947 have been largely offset by the increased surface water run-off from development for major floods.

The officer responsible for Planning Liaison is the Area Planning Manager.

ISSUES	PRIORITY H/M/L	RESPONSIBILITY	ESTIMATED COST £	ACTION PERIOD					DETAILS	BENEFITS
				95/6	96/7	97/8	98/9	99/00		
54. Adoption of NRA model policies in Local Authority Structure and Local Plans	High	NRA Local Authority	nil	●	●	●	●	●	NRA as a statutory consultee in development plan process aims to preserve and enhance water resources, water quality, flood defence standards, conservation & recreation by the use of model policies.	Water environment and the public.
55. Amend planning application forms to include water supply source	Medium	NRA Local Authority	nil	●	●				The impact of developments on water resources is becoming a high profile issue as their availability decreases.	Will enable NRA to better assess planning proposals in terms of water resources and to advise accordingly.
56. New roads and bypasses	High	NRA Highways Authorities Local Authorities	n/a	●	●	●	●	●	The NRA is consulted by road agencies and recommends measures to ensure pollution prevention & flood protection and measures in all road proposals and ensure nature conservation interests are protected and enhanced with all road proposals.	Protection and enhancement of water environment, avoid increased flood risk, and avoid pollution.
57. Section 105(2) Survey, Water Resources Act 1991	High	NRA	>1 million	●	●	●	●	●	The collection of hydrological and survey data to establish the flood plain limits & tidal inundation areas.	Definitive flooding information for use by planning authorities in producing Local and structure Plans.

n/a Cost currently not available either undetermined or dependent upon future work.

■ Period for feasibility study/project appraisal. ● Period of actual work on site or action being undertaken.

KEY TO TABLES AND ABBREVIATIONS

AWS Anglian Water Services Ltd.

Aquifers Water bearing rock formations. Water occurs within the rock itself in the spaces between the rock granules as well as in cracks and fissures. Water contained within aquifers is known as groundwater and the level at which water occurs is the groundwater table.

BOD Biochemical Oxygen Demand. Measure of the breakdown of organic matter.

DO Dissolved Oxygen.

DOE Department of Environment.

EN English Nature.

REC River Ecosystem Class. A use related classification of water quality in 5 classes which is similar to the previous FEC classification. It forms part of the Water Quality Objectives which will provide the basis for the eventual implementation of Statutory Water Quality Objectives.

m AOD Metres above sea level (above Ordnance Datum Newlyn (AODN). In parts of the catchment ODN is reset at 100m, the South Level datum (SLD).

MAFF Ministry of Agriculture, Fisheries and Food.

NRA National Rivers Authority.

NH₃ Ammonia.

PWS Public Water Supply.

OFWAT Office of Water Services. The regulator of the water companies controlling how much they can charge for their services.

RQO River Quality Objective. This is an Anglian Region based system of assessing the water quality.

STW Sewage Treatment Works.

TWVC Three Valleys Water Company Ltd.

UWWTD Urban Waste Water Treatment Directive from the European Community.

MRF Minimum Residual Flow.

UNITS

Cubic Metres m³ = 220 gallons.

Litres l = 1.76 pints.

Milligrams mg = 0.001 gm.

Grammes g = 0.0353 ounces.

Kilometres km = 0.6214 miles.

Metres m = 3.281 feet.

Hectares ha = 2.47 acres.

FUTURE REVIEW AND MONITORING

The NRA will be jointly responsible, with other identified organisations and individuals, for implementing this Plan. Annual monitoring reports to record progress in fulfilling the Action Plan will be produced by the NRA and distributed to interested parties/ These reports will take the form of a short progress report and 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 catchment but will normally be five years.

Further details of issues and actions detailed in this Catchment Management Plan can be obtained from:

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Planning Manager
National Rivers Authority (Anglian Region)
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Bromholme Lane
BRAMPTON
Huntingdon PE18 8NE**

Tel: (01480) 414581

THE NRA ANGLIAN REGION CATCHMENT MANAGEMENT BOUNDARIES



The National Rivers Authority

Guardians of the Water Environment

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

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

The main functions of the NRA are:

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



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