


MIDDLE LEE CATCHMENT MANAGEMENT PLAN ACTION PLAN



NRA
National Rivers Authority
Thames Region
April 1995

The Middle Lee Action Plan will be reviewed annually by ourselves, and progress reports can be placed in the wallet at the back of this document. If you have any questions about the content of this report, please contact:

Craig Woolhouse,
Catchment Manager,
National Rivers Authority,
The Grange,
97 Crossbrook Street,
Waltham Cross,
Herts EN8 8HE

Tel: 01992 645067
Fax: 01992 641931



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FOREWORD

We as "Guardians of the Water Environment" are committed to integrated management of the water environment through catchment management planning. The Middle Lee catchment contains many valuable sites for recreation and conservation as well as pressure points for future development. Our aim is to ensure the continued well-being of the rivers and groundwater of this area.

In this plan we not only identify actions to protect and improve the water environment over the next few years, but we also establish a catchment vision to

guide policy and action for at least the next 10 years.

My Area team is committed to the implementation of this Action Plan, but recognise that it can only be achieved in partnership with others. We hope that we can rely on your continued help and support to take this initiative forward.

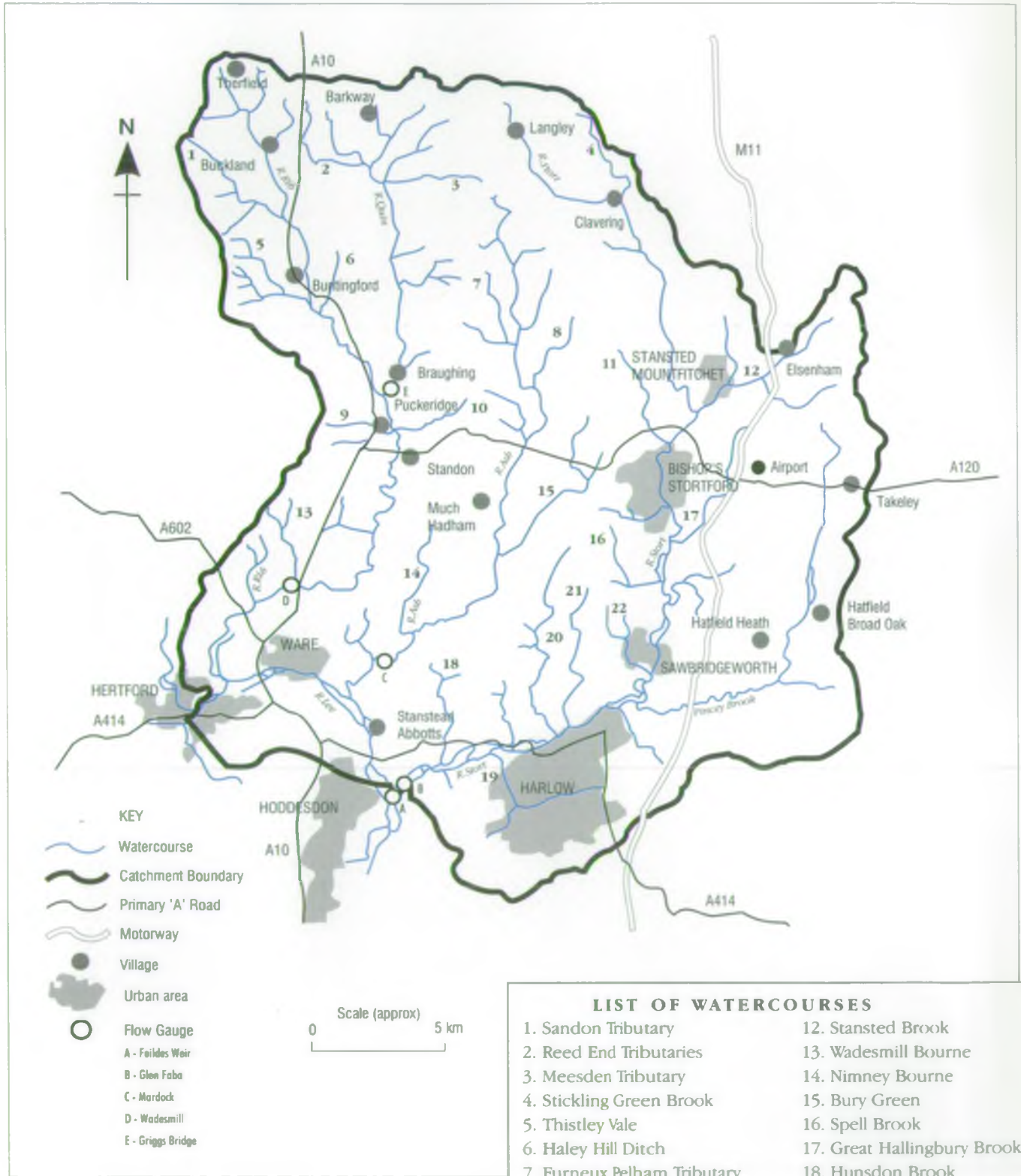


John Dickinson
*North East Area Manager
Thames Region
National Rivers Authority*

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MAP OF MIDDLE LEE CATCHMENT



VISION FOR THE MIDDLE LEE CATCHMENT

The primarily rural nature of the area is reflected in the character and setting of the rivers. Even the large towns of Harlow and Bishop's Stortford have largely allowed the local rivers space to breathe and function. The openness and natural state of many parts of the Rivers Rib, Ash and Stort is in contrast, however, to the distinct but much altered River Lee corridor between Hertford and Hoddesdon.

The Chalk aquifer under the catchment is a source of water for local domestic and industrial needs. It is also the source of the Rivers Ash, Rib and Stort. Many local villages and towns, such as Puckeridge and Standon on the River Rib, Much Hadham on the River Ash, and Bishop's Stortford on the River Stort have developed around these traditionally good quality waters. The area has also prospered from the good quality of the agricultural land. However, the post-war period has seen a marked reduction in the ecological value of local rivers and wetlands as a result of agricultural policies and practices, and urban development. Key objectives for the NRA will be to:

- *ensure that the quality and quantity of water in aquifers are not compromised*
- *review and report on the interactions between groundwater, river flows and related uses and activities on the Rivers Ash and Stort by 1997*
- *with others enhance the ecological diversity and landscape character of 40 km of river bank by 2010.*

Of primary importance is the Stort Valley Corridor. This is a valuable natural resource comprising sensitive ecological habitats, a landscape of considerable diversity and value, and areas which are popular for informal recreation and general amenity. The Stort Navigation is of particular historical significance and provides a valuable opportunity for recreational cruising. However, ensuring that the corridor has a sustainable future will need positive action. Key objectives will be to:

- *ensure the closest possible liaison between relevant local authorities in Hertfordshire and Essex, British Waterways, National Rivers Authority, English Nature, landowners and other interested parties*
- *develop an agreed strategy for the corridor for public endorsement by all interested parties by 1996*
- *implement all improvements identified in the Otter Habitat Survey for the corridor by 2005.*

In its short length between Hertford and Hoddesdon the River Lee supports habitats of a high quality, a busy navigation, important flood control structures, formal and informal recreation facilities (managed by the Lee Valley Regional Park Authority and British Waterways), mineral extraction, communications links and an important public water supply abstraction at New Gauge. Opportunities to extend and improve the management of existing facilities need to be carefully balanced with conservation interests. Key objectives will be:

- *for the NRA to review flood defence standards on the River Lee by 2000 and implement all justifiable works*
- *to extend the range and capacity of formal water recreation facilities in parallel with conservation enhancements*
- *to secure a management agreement for Kings Mead by 1995.*

Achievement of this vision for the catchment will require the joint efforts of the NRA, local communities and their representatives, government agencies and industry. The NRA will therefore:

- *work with all relevant parties to implement and review this plan*
- *continue to listen and talk to interested parties to ensure the plan retains wide ranging support.*

INTRODUCTION

The NRA was established in 1989 and is the principle organisation responsible for safeguarding and improving the water environment in England and Wales. We have statutory responsibilities for water quality, water resources, flood defence, fisheries, conservation, navigation and recreation as outlined in our mission statement:

'We will protect and improve the water environment by the effective management of water resources and by substantial reductions in pollution. We will aim to provide effective defence for people and property against flooding from rivers and the sea. In discharging our duties we will operate openly and balance the interests of all who benefit from and use rivers, groundwater, estuaries and coastal water. We will be businesslike, efficient and caring towards our employees.'

We place particular importance on planning for the future of the environment through an integrated approach to river management. We recognise the need to work with local authorities, the local community, landowners, interested groups, industry and other agencies whose activities and uses interact with or impact on the water environment.



CATCHMENT MANAGEMENT PLANS

The water environment is subject to a wide variety of uses which invariably interact and sometimes conflict with each other. The process of catchment management planning has been developed to help manage these interactions and conflicts for the overall benefit of the water environment and its users. Through catchment planning we establish a long term vision for the catchment. To meet this we set objectives for environmental improvements and prevention of future environmental damage whilst considering the many demands on the water environment in the catchment. The process involves the following stages:

■ *Informal liaison*

We meet with local authorities, relevant organisations and interested groups to discuss issues relevant to the catchment and to identify possible actions.

■ *Production of a Consultation Report*

This report contains information about the catchment, its resources, uses and activities and its present status. It describes issues arising within the catchment and possible actions to resolve them.

■ *Formal external consultation*

The report goes out to interested external bodies and members of the public for their comments and views.

■ *Production of the Action Plan*

Views are taken on board in producing a plan of action.

■ *Annual Reviews*

Reports are made on progress of the actions.

A Consultation Report for the Middle Lee catchment was produced in September 1994. After a period of consultation and liaison both internally and externally, we have produced this, the Action Plan. This outlines:

- *What is going to be done*
- *Who will be involved*
- *When it will be done*
- *Where known, how much it will cost.*

The plan will be reviewed on an annual basis and we will report on progress made.

REVIEW OF PUBLIC CONSULTATION AND LIAISON

The Middle Lee Catchment Management Plan Consultation Report was published in September 1994. It consists of a description of uses, activities and status of the catchment, together with descriptions of issues arising with possible options for dealing with them.

The Consultation Report was launched to an invited audience on 23 September. This was followed by two public meetings at Ware and Bishop's Stortford in early October.

Over 400 copies of the report have been sent out to key organisations and individuals interested in the catchment. Copies have also been placed in local libraries and local authority offices. Advertisements were placed in local newspapers, and posters were put up on notice boards within the catchment.

Public consultation was initially set for a 9 week period commencing 23 September. However, this was extended to 13 January as some copies of the document were sent out late to landowners and other users.

Over 40 written responses were received and some of the key points raised were as follows:

- *There was general support for the process of catchment planning and the content of this particular catchment management plan*
- *Several groups were particularly supportive of the conservation projects and the general enhancement of areas along the river corridor*
- *Some consultees would like to see more tangible targets with respect to increasing the number and diversity of species and habitats*
- *Concern was expressed over the apparent lack of flows in the rivers of the catchment at certain times of the year and there was support for the proposal to look into this*
- *Concern was expressed by boat owners and users that the report erred on the side of conservation with not enough support for their legitimate needs*
- *There was much support for the proposals to improve communications between interested parties*
- *Several factual errors and omissions of data were identified though these were not found to affect the conclusions of the report.*



OVERVIEW OF THE CATCHMENT

The catchment covers an area of 550 sq km with a population of approximately 189 400. It is largely rural with the villages of Buckland, Barkway, Langley, Elsenham and Takeley marking the upper reaches. Significant urban areas include Bishop's Stortford, Harlow, Ware, Sawbridgeworth, Stansted Mountfitchet and parts of Hertford and Hoddesdon.

The catchment encompasses the Rivers Rib, Quin, Ash and Stort, and their tributaries. It also includes that part of the River Lee that flows between Hertford and Feildes Weir, at Hoddesdon. The Rivers Lee and Stort (as far upstream as Bishop's Stortford) are both used for navigation and although neither take commercial traffic, they are an important recreation and amenity resource for the local population.

The geology of the catchment is characterised by two distinct types. Most of the land drained by the River Stort to the south and east of Bishop's Stortford lies on London Clay, with the remainder of the catchment lying predominantly on Upper Chalk. Clayey soils which are not very permeable cover much of the catchment. Where the land is cut by the rivers, this has exposed drift deposits of gravels, which are an important mineral resource. The Upper Chalk in the area is an important aquifer from which large quantities of water are abstracted, particularly in the River Lee valley.

The catchment is relatively flat, with large expanses of the land used for growing cereal crops. The clayey soils that dominate the catchment have been extensively drained by farmers in order to accommodate this type of farming. With the introduction of Common Agricultural Policy reform measures in 1992 the arable area has decreased. All but the smallest farms are now required to set aside a proportion of land growing cereals.

There are good road and rail links with London, East Anglia and the Midlands, and the catchment is home to London's third airport, Stansted, to the east of Bishop's Stortford. As a result, the area is under significant and constant development pressures. Much of the land around the urban areas is now designated as Green Belt under the Town and Country Planning legislation, thus helping to prevent the spread of urbanisation.

CATCHMENT USES AND ACTIVITIES: INTERACTIONS

The population of the catchment and that of Greater London in close proximity, present increasing demands on the catchment. For example, water supply, sewage disposal, waste disposal, recreation, housing and development all impact on the water environment. Inevitably these activities often interact and sometimes conflict with each other, and effective management of them is vital if the quality of the environment in which we live is to be maintained and improved.

Due to its location, the catchment is under constant development pressure. Development in the floodplain in the past has put people and properties at risk of flooding. Local authorities and the NRA now work together to prevent unacceptable floodplain development occurring. The NRA continues to investigate flood risks and where justified implement environmentally sensitive flood alleviation schemes to reduce flooding in the future.

There are many water abstractions from the catchment, most of which are for public water supply. None are thought to cause more than localised flow problems during periods of dry weather. Water Resources staff in the NRA continue to monitor and assess water levels throughout the catchment and press for improvements where possible.

Rivers in the catchment are used for treated sewage effluent and other effluent disposal with currently 167 consented discharges. A large portion of these are for private sewage works in rural areas though Thames Water Utilities Limited (TWUL) own 17 sewage works in the catchment. During periods of dry weather, sewage effluent may be the only source of flow for some river stretches, for example the River Rib downstream of Buntingford. Despite this, quality surveys indicate good or fair water quality in the rivers of the catchment.

This general good quality is reflected in the fish communities which the rivers support. Most main river stretches are capable of supporting either coarse fish or trout and, as a result, angling is a popular form of recreation. Fish farming however, is thought to have introduced non-native crayfish to the catchment preventing the return of the native species.

Changing land use and development around the river corridor can also have an adverse impact on plants and animals. A reduction in the number and diversity of habitats can lead to a reduction in species. Otters, for example, disappeared from the catchment in 1974 though there have been sightings recently. It is important that we protect and enhance land along the river corridor in order to protect wildlife communities and to attract species such as the otter back to the catchment.

The catchment does however, still support many areas of importance for conservation with several Sites of Special Scientific Interest (SSSIs) and Wildlife Trust Nature Reserves. Successful management of these sites as well as the management of land and water use demands, is important in order to sustain and enhance these valuable assets. The NRA together with English Nature has a statutory obligation to develop Water Level Management Plans for water related SSSIs. The aim is to ensure that water levels are sufficient to maintain these important conservation areas.

Minerals have been extracted from several different points in the catchment, concentrated around the River Lee corridor. Some former extraction sites are now used for waste disposal. Others have been restored as water features either for conservation or recreation. Around Amwell for example, is said to be one of the best places for bird watching in Europe as well as being an important site for other informal recreation.

There are many other informal and formal recreation sites in the catchment particularly on the Rivers Lee and Stort, which meet the needs of the large population in close proximity. Boating and angling are particularly prominent watersports and there are also venues for sailing and water skiing as well as many sites for informal recreation. It is therefore important that these legitimate recreational demands on the water environment are balanced with the conservation interests of the area.

The NRA is the organisation responsible for protecting the water environment. Other organisations and landowners however, have interests and responsibilities regarding the water environment, for example Local Authorities, British Waterways and other interest groups. It is therefore important that we establish good communications to help all parties carry out their role effectively.



RIVER QUALITY OBJECTIVES

The NRA establishes targets for water quality known as River Quality Objectives (RQOs). These targets for water quality are to be developed for recognised uses to which stretches of river may be put. The 5 uses proposed are:

- *River Ecosystem*
- *Special Ecosystem*
- *Abstraction for Potable Water Supply*
- *Industrial or Agricultural Abstraction*
- *Water Sports.*

Standards have been developed for the River Ecosystem (RE) use and are under development for the rest of the uses. Present RQOs are therefore based only on the RE classification which consists of 5 classes:

RE1: Water of very good quality suitable for all fish species

RE2: Water of good quality suitable for all fish species

RE3: Water of fair quality suitable for high class coarse fish populations

RE4: Water of fair quality suitable for coarse fish populations

RE5: Water of poor quality which is likely to limit coarse fish populations.

The following table shows short-term objectives (objectives for the next 10 years) in terms of RE use, for stretches of river in the catchment. It also gives a present RE value indicating the present state of the stretch. Any stretches that do not meet the short-term RQO at present, are an issue to be dealt with in this Action Plan. Some of the stretches where the RQO achievement date is 2006, meet their objective at present. However, they rely on investment at Thames Water Utilities Limited sewage treatment works if they are going to consistently comply with their objectives.

The need for long-term RQOs that look further than the next 10 years will be considered, and a public view on the required river uses within the catchment, on a reach by reach basis, would be of value in this respect. It is thought that this RQO system will eventually be made statutory by the government. The objectives will then become known as Statutory Water Quality Objectives. A timetable for this is awaited from the government.

River	Reach	RQO (year)	Present RE Class
Ash	Much Hadham (B4001)- Wareside STW	RE2 (1995)	RE2
Ash	Wareside STW - Lee	RE2 (2006)	RE2
Lee	Waterhall - Rib	RE2 (1995)	RE2
Lee	Rib - Ware Lock	RE2 (1995)	RE2
Lee	Ware Lock - Stort	RE2 (1995)	RE2
Lee (nav)	Ware - Lee	RE2 (1995)	RE2
Lee (nav)	Hertford - Lee	RE2 (1995)	RE2
Pincey Brook	Stansted Airport - Stort	RE2 (2006)	RE3
Quin	Quinbury Farm - Rib	RE2 (2006)	RE2
Rib	Buntingford - Westmill	RE3 (2006)	RE3
Rib	Westmill - Quin	RE2 (2006)	RE2
Rib	Quin - Standon	RE3 (1995)	RE3
Rib	Standon - Lee	RE3 (1995)	RE3
Stansted Brook	Source - Stort	RE2 (1995)	RE2
Stort	Stansted Hazel End - Stansted Brook	RE3 (2006)	RE3
Stort	Stansted Brook - Bishop's Stortford	RE2 (2006)	RE2
Stort (nav)	Bishop's Stortford - Gt Hallingbury Brook	RE3 (1995)	RE3
Stort (nav)	Gt Hallingbury Brook - Spellbrook	RE3 (1995)	RE3
Stort (nav)	Spellbrook - Pincey Brook	RE3 (1995)	RE3
Stort (nav)	Pincey Brook - Burnt Mill	RE2 (1995)	RE2
Stort (nav)	Burnt Mill - Lee	RE2 (1995)	RE2

CATCHMENT ACTION

The vision for the Middle Lee Catchment has already been presented. Achievement of the vision is dependant upon implementation of the following land use statement (pages 10 - 11) and action to tackle the key issues set out later (pages 12 - 17). These issues have been grouped under six summary headings as in the Middle Lee Catchment Management Plan Consultation Report:

- *Stort Corridor*
- *Lee Corridor*
- *Conservation Projects*
- *Pollution Control and Prevention*
- *Management and Communications*
- *Low Flows.*

The issues are presented with a number of actions, a target timetable and the identification of responsible parties, with costs outlined where possible. A contact name is given for each issue or action and contact telephone numbers can be found on page 18.

During the consultation process we listened to comments from many external bodies. As a result some issues that were originally identified have have not been taken further whilst some new issues have been identified and developed. Issues not to be taken forward at this stage are:

Stort Corridor:

- Detrimental environmental impact of past flood defence works - as opportunities arise we may undertake remedial work. However, such actions are not formally programmed in this Action Plan.

Lee Corridor:

- Frequency of lock use - continued monitoring is to be carried out on the Lee and Stort Navigations. No new work is included in this Action Plan.

Pollution Control and Prevention:

- Septic tank discharges - this problem is not thought to be of serious consequence in this catchment, hence no action is proposed in this Action Plan.
- Wrong connections - this problem is a much higher priority on other catchments within the region. No action is proposed in this Action Plan.
- RQO failures - further analysis of the water quality monitoring results have resulted in two identified reaches now meeting their objectives.

In addition, the following new issues have been identified:

Stort Corridor:

- Development of a natural resource/land use strategy for the management of the Stort corridor. See issue number 6.

Pollution Control and Prevention:

- Pincey Brook from Stansted Airport to the River Stort does not meet its short term River Quality Objective (RQO). See issue number 18 and table on page 8.
- Areas of land to the north of Hertford and Ware have planning permission for mineral extraction and subsequent solid waste disposal. As the sites lie within a Zone II groundwater protection area, backfilling with non-inert waste may pose a threat to groundwater supplies. See issue number 21.



LAND USE STATEMENT

The broad aim of the catchment planning process is to promote the sensitive use of the water environment so that we meet the needs of the present without compromising the ability of future generations to meet their needs. This is known as sustainable development.

To achieve this objective we must consider all factors that may influence the water environment. The way land is used in and around the catchment can cause changes to the river and its environment. For example:

- *Housing and industrial developments bring a demand for water, sewage and waste disposal, and also increase the risk of pollution*
- *More households bring an increase in the demand for water based recreation*
- *Development in the flood plain can damage conservation interests as well as causing an increased risk of flooding elsewhere*

Land use change and development in the catchment are inevitable consequences of its location and the changing population pattern. The NRA, local authorities and others, have an important role to play in ensuring that local people have an opportunity to guide and influence the nature and location of future development proposals. An important consideration for this plan is therefore to reflect upon the consultation responses in order to influence land use and development so as to ensure that future generations have at least the same quality of water environment as ourselves.

The control of land use and development is the responsibility of local planning authorities through the implementation of Town and Country Planning legislation. Local authorities produce development plans which are statutory documents that set out the framework for land use change. These plans act as a key instrument when determining applications for planning permission, and are therefore an important tool in the protection of the water environment.

The NRA works closely with the local authorities in the production of development plans, to encourage the inclusion of policies which reflect our concerns and responsibilities. At present we are undertaking a strategic planning initiative, Thames 21, which has identified future development pressure points. Stansted Airport has been identified as one of these areas of concern, and the strategy will identify water related environmental thresholds (e.g. water quality) which the impact of future development can be tested against.

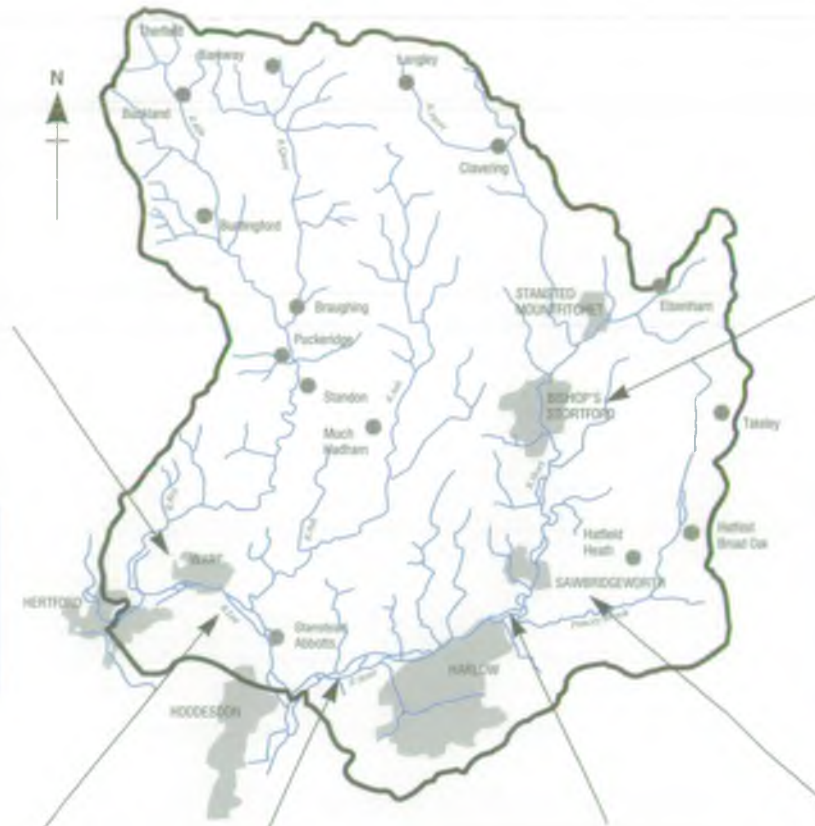
On a more detailed level we have produced a guidance document entitled, 'Guidance Notes for Local Planning Authorities on the Methods of Protecting the Water Environment through Development Plans'. This identifies the water related issues that should be integrated into the land use planning system.

Within the Middle Lee catchment there are several issues identified in the Consultation Report which can be resolved with the support and co-operation of the local authorities. The following land use statements are policies specific to the Middle Lee catchment which we will encourage planning authorities to incorporate in their development plans.



Large areas of land to the north of Ware and Hertford have planning permission for mineral extraction and subsequent restoration by landfilling with wastes. These sites lie within a Zone II groundwater protection area for public water supply boreholes at Ware and Hertford. Strict controls need to be applied to landfilling in this area in order to protect groundwater resources and public water supplies.

POLICY: Discourage backfilling with non-inert wastes, where this would pose an unacceptable threat to groundwater resources and public supplies, in line with the NRA's Groundwater Protection Policy



Stansted Airport has been highlighted as a regional pressure point for development in the future. Within the catchment, development pressure for infrastructure and housing will centre upon Bishop's Stortford, Harlow and the immediate Stansted area, and monitoring of impacts will be required to ensure the complete protection of the water environment.

POLICY: New development located within the Bishop's Stortford and Stansted area, will be carried out with due regard to the water environment.

POLICY: Any future expansion of Stansted Airport, will incorporate suitable pollution control measures in any proposals.

The old gravel pits along the Lee corridor are subject to potentially conflicting demands for recreation, conservation and water storage.

POLICY: Ensure that proposals for the use of gravel pits along the Lee corridor balance the competing needs of conservation, recreation and flood defence

The River Stort valley is an important corridor in environmental terms.

POLICY: Establish a land and water use strategy for the River Stort corridor, together with all other interested parties

Flooding of properties and land occurs at various points within the River Stort catchment. Whilst the NRA is carrying out a flood defence study of the Stort catchment, we need to ensure that no future development is allowed to exacerbate the situation.

POLICY: Resist further development along the Stort corridor that could cause an increase in flooding

Increased recreation on the backloops of the Stort could threaten valuable conservation areas. There needs to be a balance between the legitimate demand for additional moorings and environmental protection.

POLICY: Limit moorings in areas important for conservation. Ensure their location minimises their environmental impact

CATCHMENT WIDE POLICIES

Several sites on the catchment have been identified as suitable potential habitats for otters. Some require enhancement and this is to be done on a priority basis. However, these areas need protection from potentially damaging land use change and development.

POLICY: Resist development that could adversely impact on potential otter habitat sites

The use of non-native crayfish at fish farms on the catchment is thought to be preventing the return of the native crayfish.

POLICY: Planning permission will not normally be granted for fish farms unless structures are in place to prevent the release of non native species into the river system

Due to the location and proximity to London, the catchment is under constant pressure from significant development proposals. This can put demands on many of the catchment's resources.

POLICY: Take full account of water resources, sewerage and sewage treatment issues when considering significant development proposals

To enable both the NRA and local authorities to gain a better understanding of the water environment, a number of environmental thresholds will be developed to assess the impact of future development and activities, in line with Local Agenda 21 initiatives.

POLICY: Ensure all future plans and strategies identify environmental thresholds, and monitor the effectiveness of policies in protecting and enhancing the water environment

Whilst these proposed land policies are specific to the Middle Lee Catchment, we will continue to liaise with local authorities on land use matters that potentially affect the water environment. Such involvement will focus on our National and Regional Policy Guidelines.

STORT CORRIDOR

Along the Stort corridor many people and properties are at risk of flooding. The NRA and local authorities have powers to minimise this risk. Works done however, must be sensitive to their surroundings. The Stort corridor is a valuable natural resource for landscape, amenity, recreation and conservation. Balancing these demands on the catchment is important to ensure sustainability.

Issue No.	Objective	Action	Lead	Partner	Total Cost (£k)	1995/6	1996/7	1997/8	1998/9	1999/on
1.	To minimise the number of people and properties at risk of flooding, with due regard for the environment Contact: Mike Pomfrett	Undertake flood alleviation works at Clavering subject to MAFF approval of economic viability of works	NRA	ECC or UDC	50		—————			
		Undertake flood alleviation works at Manuden subject to MAFF approval of economic viability of works	NRA		60		—————			
		Undertake flood alleviation works at Ugley Brook subject to MAFF approval of economic viability of works	NRA		50		———			
		Complete middle reach phase of review of flood risks on the Stort (Bishop's Stortford to Sawbridgeworth)	NRA	BW	85	—————				
		Carry out lower reach phase of review of flood risks on the Stort (Harlow to River Lee)	NRA	BW	50		———			
2.	Evaluate improvements to the flood monitoring network in order to improve the flood warning service provided by the NRA Contact: Bryony May	Installation of telemetry in upper reaches of Pincey Brook and between Bishop's Stortford and Roydon	NRA		10		—————			
		Carry out computer modelling to enable flood flow forecasting at Sheering Hall on the Pincey Brook	NRA		< 10	●				
3.	To manage operations and maintenance procedures on the navigation to ensure all needs are met where possible, without compromising the environment Contact: Mike Dicker	NRA and BW to work together on the operational programme for forthcoming work on the Stort Navigation	BW/NRA		n.a.	●	●	●	●	●
4.	To balance the recreational use and conservation interests of the backloops of the Stort Navigation Contact: Chris Catling	Limit the number of moorings in sensitive areas as planning applications are submitted	LAs	NRA HMWT EWT BW	n.a.	—————→				
		Identify sites for moorings to encourage recreation without detrimental environmental impact	BW	NRA LAs HMWT EWT	n.a.		———			
5.	To manage the flood lagoon at Spellbrook in order to safeguard its SSSI status without compromising its flood storage capability Contact: Chris Catling	Implement works highlighted in the interim SSSI management plan	NRA	Eng Nat	n.a.	—————				
		Long-term programme of tree pollarding and bank raising	NRA	Eng Nat	n.a.	- - - - -				
		Preparation of a Water Level Management Plan in accordance with MAFF guidelines	NRA	Eng Nat	n.a.	●				
		Assess the effectiveness of enhancement works carried out and report back	NRA	Eng Nat	n.a.		● — ●			
		If successful, promote the site management techniques as best practice	NRA	Eng Nat	n.a.				●	
6.	To influence and encourage sustainable development along the river corridor Contact: Stuart Reilly	Produce an integrated land and water use strategy for the Stort corridor (Stansted Mountfitchet to River Lee)	NRA	HCC ECC BW LAs EWT HMWT CoCo EH	< 15	—————				

LEE CORRIDOR

The Lee corridor in the Middle Lee catchment runs from Hertford to the north west side of Hoddesdon. Gravel extraction has been a significant activity in the area. The corridor has great potential if efforts are coordinated and works are carried out with due regard for other interests.

Issue No.	Objective	Action	Lead	Partner	Total Cost (£k)	1995/6	1996/7	1997/8	1998/9	1999/on
7.	To protect and improve the important conservation interests of Kings Mead through coordinated management	Ensure implementation of the management plan for the Kings Mead site recently published by HMWT and HCMS	HMWT/HERC	NRA/TWUL	n.a.	●	●			
		Improve operation of sluices and channels	NRA	HMWT	n.a.	●				
		Monitor biodiversity and any changes that occur due to works carried out through the management plan	HMWT	HERC	n.a.	●	●	●		
Contact: Chris Catling										
8.	To restore the Amwell Magna loop without compromising flood defence interests	Complete scheduled environmental enhancement works at the site	NRA		n.a.	●				
		Monitor enhancements and biodiversity (fisheries and biology) and report back	NRA		n.a.	●	●			
		Monitor flow through the loop to ensure it is adequate for the fishery	NRA		n.a.	●	●			
		Make changes to flow regime if required	NRA	BW	n.a.		●	●	●	
Contact: Nick Buck										
9.	To seek the most effective mechanism whereby the NRA may help to promote improved provision for a wide range of water-related recreational pursuits within the Lee Valley	Collate existing information on the recreational demand and provision/opportunity on the waterways and on gravel pits of the Lee Valley	NRA	ECC HCC IVRPA HMWT ECSR BW LAS IVRPA	< 10	●				
		Review past, current and planned recreational developments and assess need for co-ordinating role between the bodies involved in order to establish a strategy for initiatives	NRA	EN HCC ECC LAS EH BW	n.a.		●			
		Evaluate the environmental capacity of the Herts sand and gravel belt	NRA	HCC LAS	20	●				
Contact: Andrew Graham										
10.	To improve and maintain important structures on the River Lee system	Repair work to be done at Hardmeads	NRA	BW	200	●				
		Repair work to be done at Stansted	NRA	BW	200		●			
		Review of options for improvements to be undertaken at Dicker Mill	NRA	BW Landowner	n.a.	●				
Contact: Mike Pomfrett										
11.	Ensure satisfactory flood protection is being offered by the Lee Flood Relief Channel to properties in Hertford, Ware and downstream to Feildes weir.	Hydraulic studies to evaluate standards of flood protection achieved	NRA		50	—				
Contact: Craig Woolhouse										

CONSERVATION PROJECTS

This catchment has one of the best range of wetland habitats in the south-east of England. Facilitating the return of native species to the catchment is an important aspect of the vision for the catchment. We hope to do this by promoting conservation management of the river corridors, by seeking to control invasive species and by ensuring that the right environmental conditions are present to allow the re-establishment of native species, such as the otter and the white clawed crayfish.

Issue No.	Objective	Action	Lead	Partner	Total Cost (£k)	1995/6	1996/7	1997/8	1998/9	1999/on
12.	To improve habitat quality and diversity on the catchment	Review and report on progress of the otter habitat project Contact: Graham White (HMWT)	HMWT	NRA EWT	n.a.	●	●			
		Enhance potential sites identified in the otter habitat survey Contact: Chris Catling	NRA	HMWT EWT LAs	n.a.	-----				
		Protect potential sites from development pressures Contact: Chris Catling	LAs	NRA HMWT EWT	< 5	—————→				
		Investigate improving eel populations on the catchment and report back Contact: Mark Pilcher	NRA		n.a.	●	●			
		Undertake environmental enhancements between Wadesmill and the A10 on the River Rib Contact: Mark Pilcher	NRA	Landowners	n.a.	●				
		Undertake environmental enhancements at Little Hadham on the River Ash Contact: Mark Pilcher	NRA	Landowners	n.a.	●				
		Undertake environmental enhancement work on the River Stort at Harlow to improve fisheries Contact: Mark Pilcher	NRA	Landowners	n.a.	●				
13.	To assess the feasibility of re-establishing the native "white-clawed" crayfish Contact: Dave Leeming	Look at the feasibility of reintroduction on the Rivers Rib and Ash	NRA	MAFF JNCC	n.a.	●	●			
		Work with fish farms to ensure isolation of non-native species	NRA	MAFF JNCC Eng Nat FF owners	n.a.	—————				
14.	To use "set-aside", "Countryside Stewardship" and other appropriate schemes to improve the environment along the river corridor by creating buffer strips Contact: Ian Davis	Work with farmers at two riverside sites promoting set-aside and the Stewardship scheme along the river corridor	NRA	FWAG HMWT CoCo Landowners HCMS	n.a.	—————				
		Monitor progress and report back				●	●			
15.	To locate and map out the presence of invasive plant species, in order to assess the feasibility of an eradication programme Contact: Graham White (HMWT)	Map out the presence of invasive plants to assess present situation	HMWT	EN HCC NRA	n.a.	—————				
		Review and report on options to pursue management programme on a pilot tributary					●	●		

POLLUTION CONTROL AND PREVENTION

Water quality on the catchment is generally good with most stretches meeting their short-term River Quality Objectives. We are however continuing to identify pollution sources and areas where we can take action now to prevent pollution in the future.

Issue No.	Objective	Action	Lead	Partner	Total Cost (£k)	1995/6	1996/7	1997/8	1998/9	1999/on
16.	minimise the threat of pollution from towns and industry in the catchment	Continue to give advice on new development through the land use planning system	NRA	LAs	<25	—————→				
		Carry out a pollution prevention campaign at Stansted Airport	NRA	BAA Industry	<10	●				
		Carry out a pollution prevention campaign at schools in Essex	NRA	ECC	<10	●				
Contact: Julian Arkans										
17.	To investigate the contribution to eutrophication from certain sewage treatment works	Assess and report on the eutrophic impact of Bishop's Stortford STW	NRA	TWUL	n.a.	●	●	●	●	
		Assess and report on the eutrophic impact of Buntingford STW	NRA	TWUL	n.a.			●	●	
Contact: Dave Leeming										
18.	To ensure all river reaches in the catchment consistently achieve their Short-Term River Quality Objectives	Complete improvements at Hatfield Heath STW	TWUL		n.a.	----- by 2000 -----				●
Contact: Derek Tinsley										
19.	To consider the need for long-term River Quality Objectives in the catchment	Obtain the views of the public and organisations with interest in the water environment through the Annual Review for the CMP	NRA		<2		●●			
Contact: Derek Tinsley										
20.	To minimise the adverse impacts of surface water disposal on the water environment	Prepare a report on the preferred method of surface water disposal in different parts of the catchment	NRA	LAs TWUL	<15	●	●			
Contact: Dave Rylands										
21.	To ensure protection of groundwater and public water supplies in the areas north of Hertford and Ware, where mineral extraction sites are to be restored by landfilling with wastes	Discuss the way forward for these sites	HCC/NRA		5	●	●			
		Report back on decisions made	HCC/NRA		<1		●			
		Carry out a risk assessment for the sites	NRA		n.a.		●	●	●	
Contact: Ian Davey										

MANAGEMENT AND COMMUNICATIONS

Several areas where communications can be improved were highlighted during the consultation period for this catchment management plan.

Issue No.	Objective	Action	Lead	Partner	Total Cost (£k)	1995/6	1996/7	1997/8	1998/9	1999/on
22.	To improve communications with external interested parties	Prepare and provide Annual Review of progress on CMP Action Plan	NRA		<20		●	●	●	●
		NRA Project Managers to liaise with archaeology section of County Council on significant works along river banks	NRA	ECC HCC	n.a.	→				
		NRA work programme to be made more widely available	NRA		<1	→				
		NRA and British Waterways to hold quarterly liaison meetings	NRA/BW		<5	→				
Contact: Judith Gannon										
23.	To encourage the development of integrated land and water use management	Establish a formal liaison link between the NRA, local authority land use planners and key government agencies to pursue integrated land and water use management	NRA	LAs Eng Nat CoCo MAFF BW	<10	●	●	●	●	●
		Support work by local authorities on Local Agenda 21 actions and other natural resource plans and strategies	LAs	NRA	<15	→				
Contact: Craig Woolhouse										

LOW FLOWS

The NRA has a duty to conserve and secure the proper use of water resources whilst protecting the natural environment. We need to find a sustainable balance between the needs of the environment and society's legitimate needs for reliable water supplies to homes, industry and agriculture. There is a need to assess the impacts of various uses on the flow of rivers in the catchment, to inform the public and to respond to public concerns.

Issue No.	Objective	Action	Lead	Partner	Total Cost (£k)	1995/6	1996/7	1997/8	1998/9	1999/on	
24.	To investigate perceived low river flows on the catchment in response to public concern, and to rectify the situation where possible to minimise their impact	Monitor water levels on the Stort Navigation and establish an agreement to ensure a balance between conservation and navigation interests	NRA	BW	n.a.	●					
		Contact: Di Butcher									
		Inhibit the use of locks when water levels fall below minimum levels as indicated in above agreement	BW	NRA	n.a.		→				
		Contact: Mark Bensted (BW)									
		Assess the overall impact of some major abstractions on the natural flow of the River Stort and report back	NRA	TVW BW	n.a.	●—●					
Contact: Mike Owen						●—●					
Monitor water levels on the River Ash and report back	NRA		n.a.								
Contact: Di Butcher											

APPENDIX

GLOSSARY OF ABBREVIATIONS

<i>Abbreviation</i>	<i>Organisation</i>
<i>BAA</i>	British Airports Authority
<i>BW</i>	British Waterways
<i>CMS</i>	Countryside Management Service
<i>CoCo</i>	Countryside Commission
<i>ECC</i>	Essex County Council
<i>ECSR</i>	Eastern Council for Sports and Recreation
<i>EII</i>	English Heritage
<i>Eng Nat</i>	English Nature
<i>EWI</i>	Essex Wildlife Trust
<i>FWAG</i>	Farming and Wildlife Advisory Group
<i>HCC</i>	Hertfordshire County Council
<i>HCMS</i>	Herts Countryside Management Service
<i>HERC</i>	Herts Environmental Record Centre
<i>HMWT</i>	Herts and Middlesex Wildlife Trust
<i>JNCC</i>	Joint Nature Conservancy Council
<i>LAs</i>	All relevant District and Borough Councils
<i>LVRPA</i>	Lee Valley Regional Park Authority
<i>MAFF</i>	Ministry of Agriculture, Fisheries and Food
<i>TVW</i>	Three Valleys Water
<i>TWUL</i>	Thames Water Utilities Ltd
<i>UDC</i>	Uttlesford District Council

CONTACT TELEPHONE NUMBERS

<i>Name</i>	<i>Telephone No.</i>
Julian Arikans	01992 645051
Mark Bensted	0171 286 6101
Nick Buck	01992 645048
Di Butcher	01992 645440
Chris Catling	01992 645570
Graham Cowell	01992 645028
Ian Davey	01734 535404
Ian Davis	01992 645481
Judith Gannon	01992 645032
Andrew Graham	01734 535562
Mike Dicker	01992 645476
Dave Leeming	01992 645093
Bryony May	01992 645007
Mike Owen	01734 535034
Mark Pilcher	01992 645049
Mike Pomfrett	01992 645041
Stuart Reilly	01992 645030
Dave Rylands	01734 535752
Derek Tinsley	01734 535273
Graham White	01727 858901
Graig Woolhouse	01992 645067

APPENDIX

CATCHMENT FACTS

GENERAL

Area	550 sq km (62% in Herts, 38% in Essex)
Population	189,400 (50% in Herts, 50% in Essex)
Highest point	167m AOD (East of Therfield)
Lowest point	30m AOD (West of Harlow)

WATER QUANTITY

Annual average rainfall	638 mm
Annual average flow (Ml/d) in the River:	
<i>Lee (Feildes Weir)</i>	386.6
<i>Stort (Glen Faba)</i>	103.2
<i>Asb (Mardock)</i>	40.2
<i>Rib (Wadesmill)</i>	71.3
<i>Quin (Griggs Bridge)</i>	20.7

Total authorised licensed abstraction (1993): 264.2 Ml/d
 Estimated actual licensed abstraction (1993): 172 Ml/d

FLOOD DEFENCE

Length of main river in catchment 408.3 km

Major Flood Alleviation Schemes (FAS):

- Lee Valley FAS (Hoddesdon to Hertford) (1956 - 79)
- River Rib FAS through Buntingford (1982 - 83)
- River Rib FAS through Standon (1983 - 84)
- River Stort FAS (Bishop's Stortford) (1968 - 80)

FISHERIES

Length of watercourse (km) designated under EC

Directive for Freshwater Fisheries (78/659/EC):

<i>Salmonid</i>	5.8
<i>Cyprinid</i>	79.5

WATER QUALITY

Length of watercourse categorised by General Quality Assessment (GQA) classes:

	GQA Class (1991 - 93)	Length (km)
<i>River Lee</i>	B	11.0
<i>River Asb</i>	B	12.6
<i>River Stort</i>	B	25.5
	C	21.9
<i>Pincey Brook</i>	C	18.3
<i>Stansted Brook</i>	A	8.3
<i>River Rib</i>	B	8.12
	C	17.0
<i>River Quin</i>	B	2.1
<i>Gt Hallingbury Brook</i>	C	1.2

Pollution Incidents in 1993:

<i>Major</i>	0
<i>Significant</i>	4
<i>Minor</i>	100

NAVIGATION

Length (km) of navigable watercourse:

<i>Lee Navigation</i>	20.0	(5 locks)
<i>River Stort</i>	9.3	(15 locks)

Notes

- (1) 1 sq km (square kilometre) is equivalent to 0.36 square miles. 1 ha (hectare) is equivalent to 2.47 acres.
- (2) m AOD is metres above Ordnance Datum.
- (3) 1mm (millimetre) is equivalent to 0.0394 inches. 1m (metre) is equivalent to 39.37 inches. 1km is equivalent to 0.621 miles.
- (4) 1 Ml/d (mega litre per day) is equivalent to 0.224 million gallons per day.
- (5) The General Quality Assessment classes are determined on the concentrations of dissolved oxygen, biochemical oxygen demand and ammonia in the water. Class A and B are 'good'; Class C and D 'fair'; Class E is 'poor'; Class F is 'bad'.
- (6) 'Main River' is a legal definition which gives certain discretionary powers to the NRA.

APPENDIX

ROUTINE WORK DONE BY THE NRA

In addition to the work outlined in the Action Plan, the NRA continues to undertake routine activities to protect and improve the water environment. These actions include:

Operations to:

- *maintain flood defences and watercourse structures*
- *manage NRA owned sites*

Monitoring to:

- *evaluate quality and quantity of surface and groundwaters*
- *evaluate flora and fauna of the water environment*

Authorisations to:

- *control physical works on rivers and their floodplains and to enhance the water environment*
- *control fisheries activities*
- *control discharges of effluent*
- *control abstractions of water*

Enforcement to:

- *ensure compliance with authorisations and legislation*

Emergency response to:

- *flooding incidents, pollution incidents and fish kills*

Liaison and Advice to:

- *ensure planning decisions do not lead to damage to the water environment*
- *prevent pollution of the water environment.*



CONTACTING THE NRA

The National Head Office of the NRA is in Bristol

Tel: 01454 624400

Fax: 01454 624409

The Thames Region Head Office is in Reading

Tel: 01734 535000

Fax: 01734 500388

The Area Manager for the North East Area of Thames Region is based at

Gade House

London Road

Rickmansworth

Herts. WD3 1RS

Tel: 01992 635566

Fax: 01992 645468

A national NRA emergency hotline is available to report pollution, poaching, flooding or any sign of damage or danger to the natural water environment. The freephone number for use anywhere in England and Wales is:

0800 80 70 60



To find out the location of your nearest oil-recycling bank contact the following freephone number:

0800 66 33 66

Norfolk Rivers Authority
Information Centre
Hull Office

Class No

Accession No AONL11