

20

EA ANGLIAN LEAPS  
- BOX 6

# local environment agency plan

## OLD BEDFORD

INCORPORATING THE MIDDLE LEVEL AND OUSE WASHES

### CONSULTATION REPORT

MAY 1997



ENVIRONMENT AGENCY

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ANGLIAN REGION

Kingfisher House, Goldhay Way,  
Orton Goldhay,  
Peterborough PE2 5ZR



ENVIRONMENT  
AGENCY



# vision

In preparing this local vision, the Environment Agency has defined what it would wish the environment to be. Through consultation, we must ensure that this Vision also includes the aspirations of all the key partners in the production of this plan. It should be remembered that the Vision may take more than 5 years to achieve, but can still influence our work in the near future.

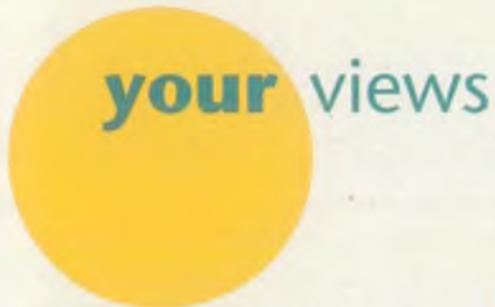
Most societies want to achieve economic development to secure a better quality of life, now and in the future. They also seek to protect their environment. The concept of sustainable development tries to reconcile these two objectives - meeting the needs of the present without compromising the ability of future generations to meet their own needs. The Agency's remit is working towards making this concept a reality whilst not jeopardising the economic livelihoods of local communities such as this one. As a statutory consultee in the Town & Country Planning process, we will encourage planned developments and infrastructure to be sustainable.

The "Old Bedford" area, found mainly in Cambridgeshire and part of Norfolk, is a highly rural locality where agricultural land use predominates. Its unique fenland landscape reflects how man has altered the waterways to produce a highly managed system. However, this is not a static ecosystem but an area which is evolving as a result of its different users and pressures imposed upon it. For example, the Ouse Washes, primarily constructed to offer flood relief over 300 years ago, also exists today as one of the Europe's most decorated havens for waterfowl.

The Agency's vision for the "Old Bedford" encapsulates the above discussion:

- We do not have control over regulating the whole environment and therefore the future of environmental protection does need to involve close working especially between local authorities and the Agency. The Agency and others will also have to, within agreed plans, work flexibly to respond to operational needs such as drought, flooding or pollution incidents. It has also to be expected that users will have to be prepared to be flexible, eg, conservationists, industrialists, navigators, anglers and farmers. The entire community of users of this environment needs to take a broader view of everyone's needs and not only from their own stance;
- our efforts need to focus on maintaining all the existing values and uses of the environment in this locality in the future. This will be a challenging task. The environment will continue to evolve perhaps through climate change and sea level rise or through altering farming practice in response to changes in the market place or the nation's economy. However, how long will current practices be sustainable for and will choices need to be made between them? We will continue to balance the overall demand for water resources from all sectors of the community with the needs of the environment. Without considerable effort, the local area will have a different and less favourable future;
- we will continue to seek improvements to water quality through negotiations with Anglian Water Services and by giving advice to land managers to encourage the best environmental practices. We would expect localised improvements downstream of Somersham and Whittlesey as a result of improvements to sewage treatment works. We will be aiming for compliance with long term objectives;
- we will also wish to see air quality continuing to improve in the future through its effective regulation and the implementation of the UK Air Quality Strategy;
- we will work with others to capitalise on opportunities to maintain and enhance the biodiversity of the area through habitat enhancement projects, wherever possible, eg, through the Wet Fens for the Future Project and maximising opportunities for recreation; and,
- the Agency will continue to strive towards a truly integrated approach to environmental management. One example of this is the regulation of waste; the on-going promotion of minimisation and recycling whilst we continue to assess the environmental practicability of disposal options such as landfill or incineration. We are still a young organisation and the future will also see the Agency evolve to manage more effectively at local, regional and at a national level.

We hope that this will be a shared vision for the community of the "Old Bedford" and as said above the Agency will work increasingly in partnership with local authorities, environmental groups, user groups and other interested parties. This LEAP, as it evolves from Consultation Report to Action Plan, will form an important focus for this partnership and target resources where they are needed most. Partnership and community involvement are the cornerstones to implementing this plan through improved communication and raised awareness, so that even individuals can make their contribution to sustaining the environment whilst enjoying its character and wildlife.



Publishing the Consultation Report marks the first phase of the Local Environment Agency Plan process for the "Old Bedford" area which started with the consultation meeting in February 1997. This document represents our analysis of the State of the Environment and highlights the issues we believe need to be addressed.

We hope that this report will be read by anyone who has an interest in the environment in this locality. Your views will help us finalise the Action Plan. We want hear yours views on the following, in particular:

- Have we identified all the major issues?
- Have we identified all the potential options for action to resolve these?
- Do you agree with our Vision for the plan area?
- Have you any comments on the appearance and contents of the report?

Please comment in writing to:

The Customer Services Manager  
Old Bedford LEAP  
Environment Agency - Anglian Region Central Area  
Bromholme Lane  
Brampton  
Huntingdon  
Cambs  
PE18 8NE

Telephone Enquiries: (01480) 414581  
FAX No: (01480) 435193

All comments should reach us by 25 August 1997

Further copies are also available at the above address.

Please Note: This is not a draft document and will not be republished. The next document in this series will be the "Old Bedford" LEAP Action Plan due February 1998.

ENVIRONMENT AGENCY



038220

# Map 1 Overview



-  Plan Boundary
-  Main River
-  Middle Level Commissioners Main Drains



NORTH

SCALE  
10KM

This book is due for return on or before the last date shown below.

~~2/5/01~~

~~20/1/02~~

ENVIRONMENT AGENCY

ANGLIAN REGION

**THE 'OLD BEDFORD'  
LOCAL ENVIRONMENT AGENCY PLAN**

CONSULTATION REPORT

MAY 1997



## FOREWORD

On April 1st 1996, the Environment Agency took over the duties of the National Rivers Authority, Her Majesty's Inspectorate of Pollution, the Waste Regulation Authorities and a small part of the Department of the Environment. The Environment Agency will provide a more comprehensive approach to the protection of the environment by combining the regulation of land, air and water.

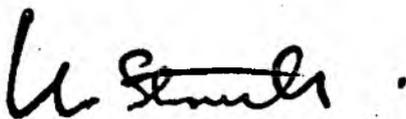
Local Environment Agency Plans (or LEAPs) will draw together the responsibilities of the Agency to set out a common vision for the management of the environment as a whole. This report provides a framework for consultation and a means of seeking consensus on issues and options for action from those involved - to realise the full environmental potential of the area.

This is Central Area's first LEAP and the issues to be considered in this Consultation Report include:

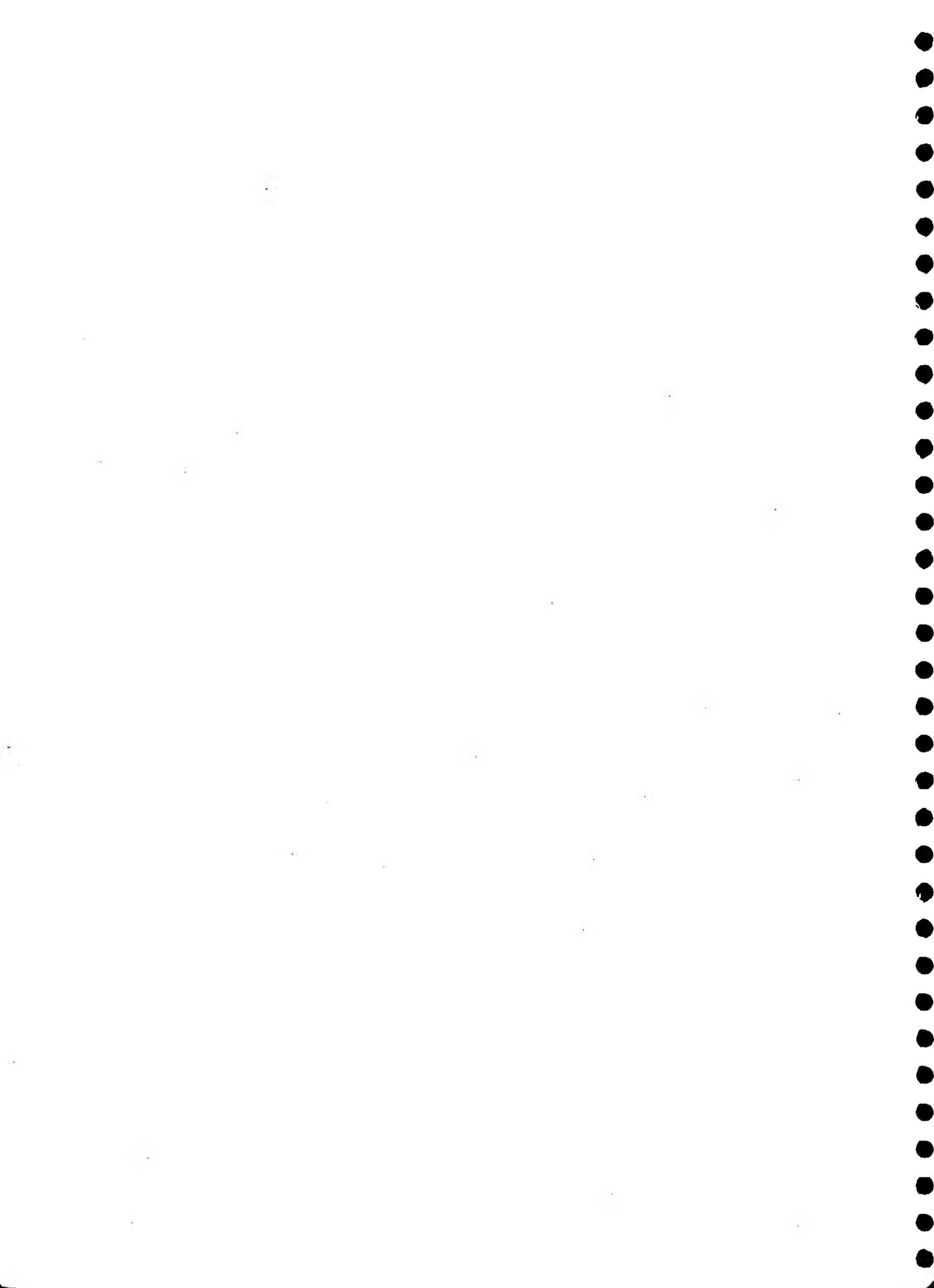
- the future management of the Ouse Washes to take account of the needs of all users;
- factors influencing current and future farming practice and other land uses; and,
- where we need to undertake further monitoring or investigation, such as to improve our knowledge of the biodiversity of the area.

This is a very comprehensive document; so can I draw your attention to the "Readers Guide" which should assist you in navigating through the report to gather the information you need.

We look forward to receiving your comments. Contributions from interested organisations, local authorities and members of the public will enable a final Action Plan to be produced which balances the conflicting demands placed upon the natural environment.



**Keith Stonell**  
**Area Manager (Central)**



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### ACKNOWLEDGEMENTS

We would like to thank all those organisations and individuals who have got involved during the preparation of this plan and especially to those who attended the early consultation meeting. In particular the staff from MAFF and ADAS who put considerable effort into the sections describing agriculture.

We would also like to thank all those Environment Agency staff who invested many hours of hard work to prepare this plan and also the valuable contribution to the process made by members of the Great Ouse Area Environment Group.

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## EXECUTIVE SUMMARY

The 'Old Bedford' LEAP is the first to be produced by the Central Area of the Environment Agency's Anglian Region.

The local area comprises the Ouse Washes and the Middle Level River Systems. Therefore, concerns about the management of the water environment predominate. The main towns are Ramsey, March and Chatteris.

The Ouse Washes (32 km from Earith to Denver) were created in the 17th Century to provide storage of floodwater from the Bedford Ouse catchment - so preventing the surrounding Middle and South levels from flooding. As one of the few remaining areas of Washland, the Ouse Washes have become one of the most important designated sites in the country for the nature conservation of migrant bird life.

The Middle Level catchment area, 60% of which is fenland and below sea level, is administered by the Middle Level Commissioners (MLC). The area is subdivided into 39 Internal Drainage Districts. The economy of this rural area is dependant on agriculture due to the creation of some of the most productive soils for arable farming in the UK by historic draining of the Fens.

The area is mainly within Cambridgeshire, the fastest growing county in Britain, and a small part of Norfolk.

### **What is Local Environment Agency Planning?**

Our environment- Air, Land and Water, supports a variety of habitats, flora and fauna including ourselves. Man 'uses' the environment in a number of ways; for the supply of drinking water, production of food crops, disposal of waste products and for recreation and enjoyment, etc.

These demands sometimes conflict and we use Local Environment Agency Planning as a tool to manage the environment in an integrated and balanced fashion.

Through the production of this Consultation Report, we offer the opportunity for anyone living or working in the area to receive a copy and express their views and ideas on the future management of the 'Old Bedford' area. This report also gives a detailed description of the state of the environment and provides a focus for working in partnership with other organisations such as local councils, English Nature (EN) and drainage authorities, etc.

After all the responses to the Consultation report are considered, an Action Plan is produced (due February 1998) which will describe the work that the Agency and others will undertake to maintain and enhance the environment over the next five years.

## **Issues facing the Area**

The following are some examples of what we believe to be the problems and challenges facing the 'Old Bedford' area. These were developed by Agency staff in discussion with the Area Environment Group and key external parties:

### **PROTECTION OF THE OUSE WASHES**

The Consultation Report describes the complexities of managing the Washes for the benefit of all, eg, ensuring satisfactory water levels in the summer and winter and habitat management continues; in partnership with landowners, users and EN.

### **CONCERNS OVER MAINTAINING FARMING IN THE LONGER TERM**

Agricultural production is now geared towards the demands of the market place - high quality and year-round produce. This has meant increased reliance on irrigation and although current water demands are met, increased demands in the future or during droughts cannot be.

Studies have shown that the peat soils are shrinking and will eventually down grade causing changes to cropping. Future farming policy needs to ensure that soil and water resources are not exhausted and that consumers are educated as to the impact of food production.

Preservation of the environment will allow survival of farming and the local economy in the longer term.

### **DEVELOPMENT & LAND USE CONSIDERATIONS**

Development is the most significant impact on the environment. The control of land use, development and Town & Country planning is the responsibility of the local authorities. The Agency is a statutory consultee in that process and will give its opinion on the impacts associated with developments such as causeways crossing the Ouse Washes, increasing landfill capacity or 1300 new dwellings in Ramsey.

### **SEWAGE TREATMENT IMPACTS UPON WATER QUALITY**

Although the majority of discharges from Anglian Water's Sewage Treatment Works (STW) are of good quality, there are a number which need to be closely monitored so that water quality is maintained and the river quality targets met. Whilst Whittlesey STW is a candidate for future improvements, Somersham STW has secured funding to lessen its impact on the Cranbrook drain.

There is also public concern over the impact combined sewer overflows are having on the old course of the River Nene - visible in March town centre. Management options are given in the full report.

## RECREATION

There are considerable problems associated with navigating in the Old Bedford, a statutory navigation; principally siltation and water levels. Your views are sought on how this situation could best be remedied.

In addition to the above, the consultation report deals with issues where we still don't know enough, especially in the field of biodiversity, eg, numbers of various animals dependant on rivers or why fish survival is not as good as we expect.

The report also highlights the need to continue to restore and enhance the environment, eg, wetland creation.

## READER'S GUIDE TO A LEAP CONSULTATION REPORT

This document has been divided into two parts to better meet the needs of our different readers. If you want a rapid grasp of the issues and the main features of the area refer to the Executive Summary and Part I. However, if you wish to gain more detail on the state of the environment and, hence, how these issues have been arrived at then please refer to Part II.

PREAMBLE includes a fold-out map which you can refer to at all times, an Executive Summary and a detailed contents page.

### PART I AREA SNAPSHOT & ISSUES IN BRIEF

- Section 1      **Introduction** - to the roles and responsibilities of the Agency and the Local Environment Agency Planning Process
- Section 2      **Overview of the Area** - provides an introduction to the area; its society, physical features and key environmental resources
- Section 3      **Issues and Options** - highlights the environmental issues in the plan area and proposes draft actions to help resolve them. More background to these issues can be found throughout the report; especially Sections 5 and 6. These are prompted throughout the text by the use of boxes containing the issue heading.
- Section 4      **Protection through Partnership** - discussion of some of the longer term (beyond the next five-ten years) issues facing the area and the role of other organisations in addressing them.

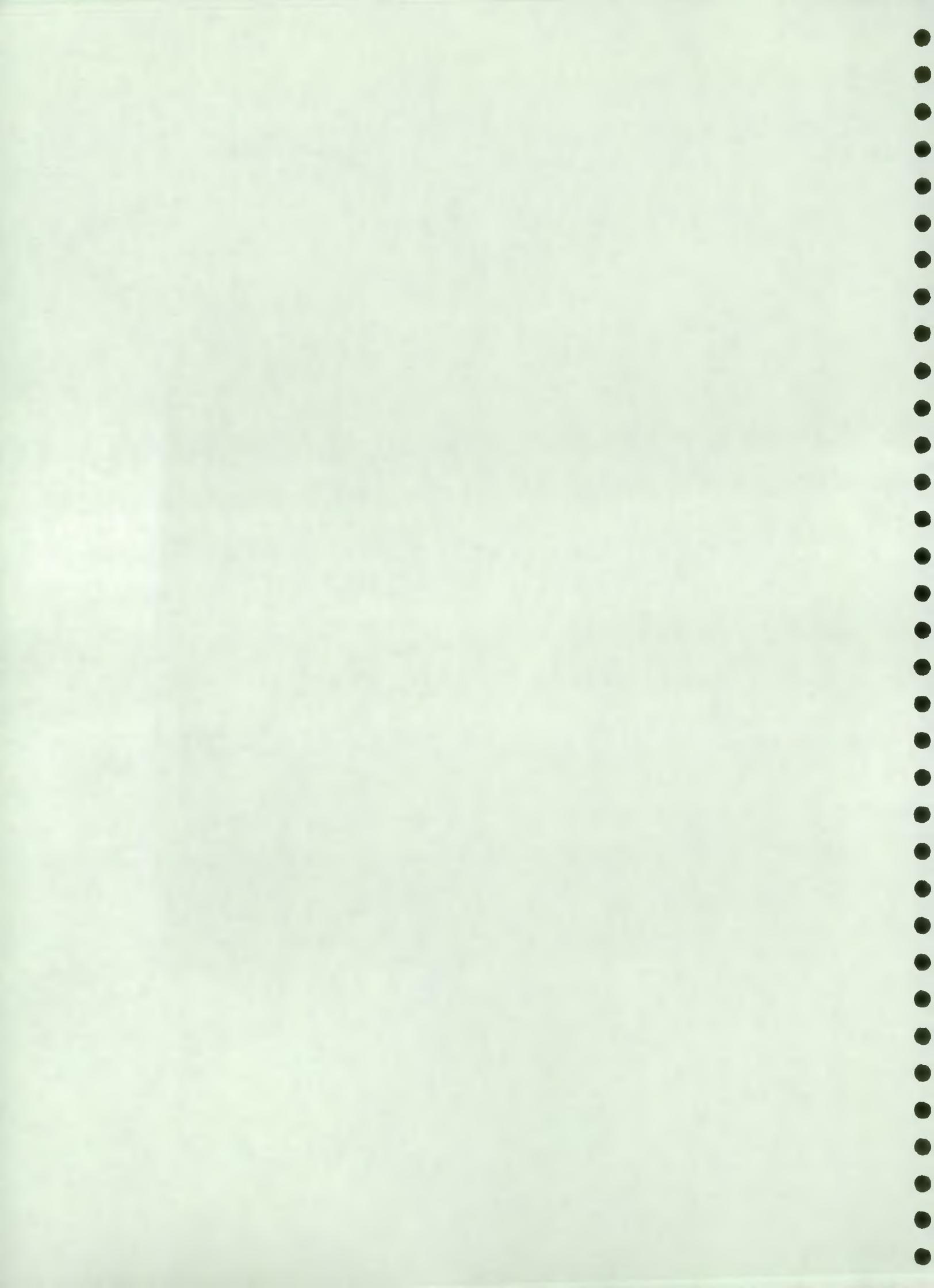
### PART II      AREA DETAIL & BACKGROUND

- Section 5      **Uses, Activities & Pressures** - we all place increasing demands on the environment but expect it to be protected from harm. This section looks at the main environmental pressures that exist in this area such as needs for waste disposal, availability of water for the irrigation of crops or the protection of sites of conservation, landscape or recreational value. Background information on the issues are prompted throughout the text by the use of boxes containing the issue heading.
- Section 6      **State of the Environment** - in this section we look at the current information on the state of the environmental resources of the plan area. Where information is available we assess the state of these resources against certain standards or targets. Background information on the issues is prompted throughout the text by the use of boxes containing the issue heading.

There are also a number of technical appendices at the back of the document. We would like to draw your attention to Appendices A and B which contain an index and a glossary.

# **PART I**

## **AREA SNAPSHOT AND ISSUES IN BRIEF**



## SECTION ONE -INTRODUCTION

**This section sets out the role of the Environment Agency and Local Environment Agency Plans along with the timescale for the production of The 'Old Bedford' LEAP.**



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## SECTION ONE - INTRODUCTION

### 1.0 Role of the Environment Agency

#### *'Guardians of the Environment'*

The Environment Agency came into being on 1 April 1996 as one of the most powerful environmental regulators in the world; by bringing together the National Rivers Authority (NRA), Her Majesty's Inspectorate of Pollution (HMIP), the Waste Regulation Authorities (WRAs) and some units of the department of the Environment (DoE) to more comprehensively regulate land, air and water environments. The Agency's vision is:

***A better environment in England and Wales for present and future generations.***

Our principal aim, set out in the Environment Act 1995, is to protect and enhance the environment, taken as a whole in order to play our part in attaining the objective of sustainable development (see Section 4.1).

We work towards sustainable development through objectives, set by ministers, which include:

- An integrated approach to environmental protection and enhancement, considering the impact of all activities and natural resources;
- Delivery of environmental goals without imposing excessive costs on industry or society as a whole;
- Provision of clear and readily available advice and information on its work;
- Development of a close and responsive relationship with the public, including local authorities, other representatives of local communities and regulated organisations.

Our duties and responsibilities are briefly described below:

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***Pollution Prevention & Control******Integrated Pollution Control (IPC)***

This includes pollution inspections to regulate industry, eg, power generation, pharmaceuticals and premises which use radioactive materials (ie, hospitals) through the issue and enforcement of authorizations. This ensures that industry minimises, prevents or renders harmless the release of polluting substances into the environment.

***Water Quality***

Water Quality monitoring and regulation of sewage and industrial discharges to watercourses, land and groundwater is undertaken by Agency staff.

***Waste Regulation***

We are responsible for ensuring the safe storage, treatment and disposal of controlled wastes consisting of household, commercial and industrial wastes (including Special Wastes) to prevent pollution and harm to human health. We issue licences for the keeping, treating and disposal of controlled waste and regularly inspect licensed facilities and carry out land fill gas monitoring and ground and surface water sampling and analysis to ensure compliance with licence conditions. We keep registers of licensed waste management facilities and exempted waste management activities. We register carriers of controlled waste and track movements of both special and transfrontier shipments of waste to ensure it is managed correctly. We also have the responsibility to survey those who produce wastes in order that we can provide adequate waste planning information to Waste Planning Authorities, and offer waste minimisation advice to industry and to monitor certain waste producers who are obliged to attain targets for the recovery and recycling of packaging wastes.

***Water Resources***

The Agency monitors river flows, groundwater levels, rainfall and climate to assess the available water resource. Officers regulate abstraction by issuing and enforcing licences granted to agricultural, industrial and domestic interests and the operation of water transfers.

### *Flood Defence*

This is crucial in protecting people and property from flooding. In addition to building and maintaining flood defences, we have a responsibility to maintain designated main rivers and provide flood protection through dredging and weed cutting. Opportunities are sought to minimise damage to the environment and where possible to enhance it through consultation with the interested parties. The Agency also provides a flood warning service.

### *Fisheries, Conservation, Recreation and Navigation*

The Agency works to maintain and improve fisheries in inland waters through surveys, restocking and the issuing of licences and enforcement. We also issue navigation licences and enforce boat safety.

The Agency has a duty to further conservation and to give due regard to recreation when carrying out its statutory duties.

The Agency will take enforcement action in cases of illegal activities.

## **1.1 What is Local Environment Agency Planning?**

The land, air and water environments are under demand from many different users and it is the allocation of these resources which is our duty to resolve. These users will invariably interact or compete for scarce resources and this may cause conflict. The Agency has the responsibility to reconcile this conflict.

Local Environment Agency Plans are published by the Agency to draw together aspects of environmental management and planning as part of the ongoing dialogue between ourselves and the various organisations involved in the protection and management of the environment. LEAPs build on the former NRA's Catchment Management Planning initiative - addressing the integrated management of land, air, as well as, the water environment. However, Catchment Management Plans will co-exist with LEAPs until such time that they are updated to address all of the Agency's responsibilities.

This is one of the six LEAPs in our Central Area. We are aiming to complete Consultation Reports for them all by the end of 1999 (see Map 2). Consultation Reports aim to give a broad review of the locality, its associated natural resources and the activities and uses that put pressure upon them; prepared as a basis for open consultation. As well as outlining the role of ourselves and others and general concerns, it identifies a manager's vision for the planning area and the issues which need to be tackled in order to make progress towards it.

**Old Bedford  
Local Environment Agency  
Plan  
Map 2**



ENVIRONMENT AGENCY



**Anglian Region Central Area  
Plan Location**

**KEY**

- Area Boundary
- Regional Boundary
- Main River
- Agency Offices
- Main Towns/Cities

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The 'Reader's Guide', above, gives more information on the contents of the document.

Following the consultation period, we will publish an Action Plan that will detail the activities that we and other organisations will be carrying out over the next few years.

## 1.2 The 'Old Bedford' LEAP

The timetable for this plan is as follows:

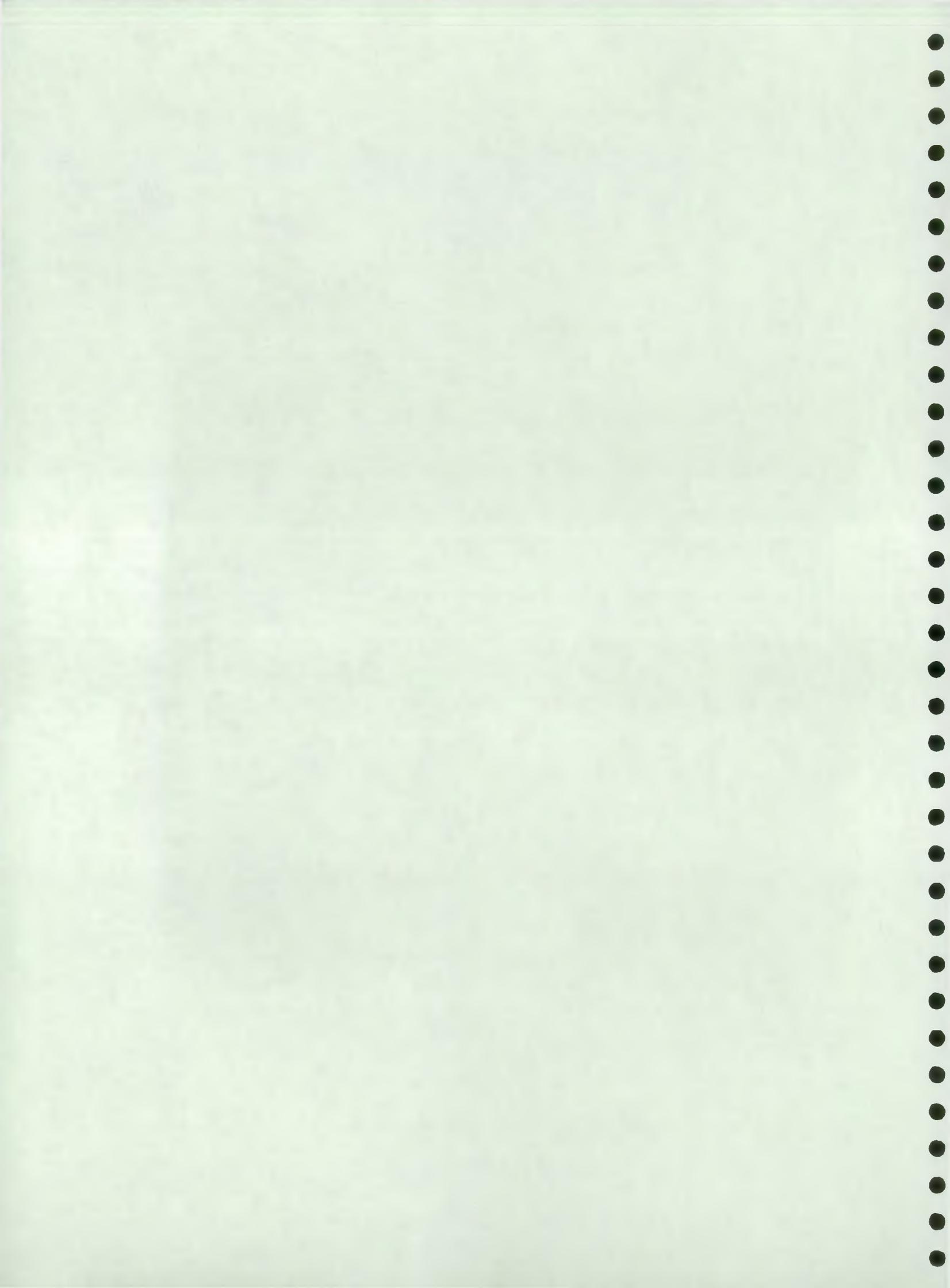
Step 1	Early Consultation	Meeting held 5 February 1997
Step 2	Consultation Report	On release from 31 May 1997
Step 3	Consultation Period	Until 25 August 1997 ( three months)
Step 4	Action plan	February 1998
Step 5	Implementation	Over the next five years with the first annual progress report ('Annual Review') due April 1999
Step 6	Full repeat of the Process	February 2003

## 1.3 Where you can get more information.

The role of the Agency and others will be described throughout this document. However, if you have any specific queries please contact your local customer services centre on 0645 333111. The Central Area team are based at offices at Bromholme Lane, Brampton, Cambs. They can also liaise, on your behalf, with our Public Relations department which houses a broad range of publications containing comprehensive information on all aspects of the Agency's work and for detailed environmental data the public registers which are both based at our regional headquarters in Peterborough

## **SECTION TWO - THE 'OLD BEDFORD' AREA**

**This section provides a general overview of the LEAP area's natural features in terms of topography, geology, rainfall and river flow along with general statements of history and livelihood of the local community. In most cases, the description involves a brief description of the available information, together with a synoptic maps/figures.**



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**SECTION TWO - THE 'OLD BEDFORD' AREA****2.0 Economy and Social Structure**

The area is mainly within Cambridgeshire, which is the fastest growing county in Britain in terms of population. This growth has led to increased development pressures in Cambridgeshire in the form of housing and in road transportation. However, this growth is on the boundaries of this plan area which remains relatively undeveloped for the reasons highlighted below. Despite the recent recession, the relative buoyancy of the local economy has meant that these pressures will see the proposed Cambridgeshire Structure Plan levels of development achieved, if not exceeded.

**INDUSTRY AND COMMERCE**

Sectors starting to grow strongly in the region as a whole include electronics, computer consultants, software, telecommunications and R&D. As would be expected, industry in the Area is to be found in and around the major centres of population, chiefly south of Peterborough and north of Huntingdon. Other long established, but usually small industrial firms are located in March.

**ENGINEERING AND MANUFACTURING**

Manufacturing and engineering is predominantly located around the Peterborough area and provides a large proportion of the employment there. March and the area south of Wisbech, located in the agricultural fenland areas, are centres for the food industry in the region. There are numerous firms which handle and pack fruit and vegetables for the fresh and frozen markets.

**AGRICULTURE**

Employment in this sector is set for continued decline as agricultural practices change (see Section 5.6). The greatest concentration of employment in this sector is in the Fens, involving fruit, vegetables and cereals production, processing and packing. Sugar beet production is also seasonally important, the crop being processed locally at Ely and Peterborough until recently, when sugar production operations moved to Bury St Edmunds and Wislington. There is some livestock production, ie, intensive poultry or pig breeding with some beef production and sheep. Feedstuffs include waste vegetable matter.

**SERVICES**

The largest proportion of the working population are employed in the business, financial and other service industries. Scientifically oriented industries have developed just outside

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the plan area in Huntingdon and professional and scientific services make up the largest component of this sector together with education, health services and local government.

### CONSTRUCTION

Employment in this sector is subject to the fluctuations brought about by economic surges and recessions but on the whole remains stable. The largest concentration of construction jobs in the county is currently in northern Huntingdonshire (Peterborough Southern Township and A1 highway improvements).

## 2.1 The Local Environment

The area comprises a combination of the Ouse Washes and the Middle Level river systems.

The Ouse Washes were created in the 17th century to provide storage of floodwater from the Bedford Ouse catchment and so preventing the surrounding Middle and South Levels from flooding. Whilst the levels have become productive arable farmland, the Washes is now a site of nature conservation value. They extend for 32 km from the village of Earith in the south to Denver in the North and are bounded by the two rivers, the Old Bedford/Delph constructed in 1637 and the Hundred Foot River constructed in 1651, with the South Level and Middle Level Barrier Banks forming the defence to the surrounding farmland, and enclosing an area of 2403 ha.

In recent years concern was expressed as to the condition of the Barrier Banks. A comprehensive study was undertaken from which it became apparent that there had been a general settlement of 200 to 300 mm over the last 40 years. The study also took into account the rise in sea levels at King's Lynn of 5 mm each year. The resulting projects raised and strengthened both banks. The work was carried out over a five year period commencing in 1990.

The Washes themselves have generally remained as summer pasture and historically have been grazed. Individual washes are separated by ditches draining from the Hundred Foot River towards the Old Bedford/Delph. These ditches are kept as full as possible in summer to act as wet fences, stock watering and maintain high water tables for the benefit of aquatic fauna and flora.

Running parallel and to the North West of the Old Bedford/Delph is the Old Bedford/Counterdrain which drains the land immediately to the West of the Ouse Washes. The Old Bedford/Counterdrain either discharges into the Tidal Ouse at Salters Lode when conditions allow, or is pumped into the Old Bedford/Delph via Welches Dam Pumping Station.

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To the West of the Ouse Washes is the Middle Level system which is an area reclaimed during the 17th century and lies between the River Nene and the Ouse Washes and is bounded by low clay hills to the South and West and by marine silts to the North.

The Middle Level has a catchment area of 70,500 ha of which 48,500 ha is fenland and lies below mean sea level. This area is sub-divided into 39 Internal Drainage Districts from which run-off water is pumped into the main arterial drainage system via 78 pumping stations. The water from these is discharged into the Tidal Ouse via St Germans Pumping Station. This whole area is administered by the MLC.

The relatively small area to the east of the Ouse Washes is drained by the Littleport and Downham and Haddenham Internal Drainage Boards (IDBs) who pump into the Hundred Foot River via pumping stations at Oxloode, Pymoor and Sutton. For more information please refer to our leaflet 'The Denver Complex'.

## 2.2 Geology and Hydrogeology

### 2.2.1 Geology

The area consists of distinct geological 'areas'; the Huntingdon and Peterborough areas and the fenlands.

The area's solid geology is shown on Map 3. The solid geology consists of Oxford Clay, the West Walton Formation, Amphill Clay, Kimmeridge Clay and Lower Greensand. These formations dip gently (at about 1°) to the southeast (see Figure 1).

Most of the area's solid geology is overlain by a variety of drift deposits. At the western edge of the plan area, Till is mapped overlying the Oxford Clay. The Till consists of chalky boulder clay and may include gravel, sand and clay layers. The fenland area, which forms most of this locality, is covered by extensive drift deposits which include unconsolidated peats, clays, silts, sands and gravels. These deposits are much younger than the solid geology and were laid down in the Quaternary Period by the shifting location of estuarine and inter-tidal areas during glacial periods. Some deposits are derived from river processes and are located along the courses of the River Ouse, the Old Bedford River and the River Nene while others are derived from deposition in lacustrine (lake) environments. Geological features can also be notified as SSSIs such as Warboys Claypit.

Old Bedford  
Local Environment Agency  
Plan  
Map 3



ENVIRONMENT AGENCY



**Solid Geology**

**KEY**

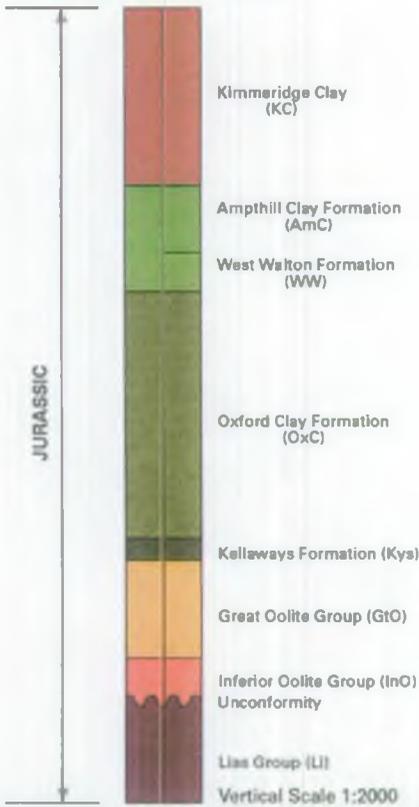
- Area Boundary
- Main River
- Middle Level Commissioners Main Drains
- Lower Greensand (LGS)
- Kimmeridge Clay (KC)
- Ampthill Clay Formation (AmC)
- Oxford Clay Formation (OxC)
- Areas of Mineral Extraction
  - 1 Somersham
  - 2 Block Fen
  - 3 Colne Fen

**Old Bedford  
Local Environment Agency  
Plan  
Figure 1**



**ENVIRONMENT AGENCY**

**Generalised Vertical Section**



**Solid Geology**

**KEY**

- Kimmeridge Clay (KC)
- Amphill Clay Formation (AmC)  
West Walton Formation (WW)
- Oxford Clay Formation (OxC)
- Kellaways Formation (Kys)
- Great Oolite Group (GtO)
- Inferior Oolite Group (InO)
- Lias (Li)
- Basement Rocks



**Generalised Cross Sections of the rocks in the Old Bedford Catchment (Simplified after BGS, 1995, Sheet 159, Wisbech and BGS, 1995, Sheet 172 Ramsey)**  
Horizontal Scale 1:100,000 Vertical Scale 1:10,000

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The solid formations are found at the surface over only a small proportion of the area. Oxford Clay is near the western limit of the area, when it is not covered by Till. Near Somersham there are outcrops of Oxford Clay and Ampthill Clay. Kimmeridge Clay and Ampthill Clay outcrop at the surface between Ely and the Hundred Foot River. Just west of Ely there is also a small outcrop of Lower Greensand.

### **2.2.2 Economic Geology**

There are some large areas of mineral extraction within this area (see Map 3). These are generally associated with gravelly drift deposits, of either marine or fluvial origin, many of which have villages located on them (see 5.5). Drift deposits can also act as minor aquifers.

Old quarries and brickpits, in the Gault clay, Kimmeridge Clay, Corallian and Oxford Clay to the north of the area have been /are being used for the landfilling of wastes. Some extraction and landfilling operations are combined.

### **2.2.3 Groundwater Hydrology**

There is little groundwater available for use within this plan area. Any local supplies of groundwater will be found within the area's drift deposits of sands and gravels. Groundwater levels are affected by climatic conditions, in particular, rainfall, abstraction and the level of water in the drains.

## **2.3 Topography and Landscape**

Most of the area was carved out of soft clays by marine and fluvial processes. The whole fenland area has been occupied more than once by the sea.

The combination of geology and physical processes has given rise to this low-lying area with its relief rarely reaching 10 m above sea level. ( In fact Holme Fen at grid reference TL 209 891, is the lowest point in the country at approximately -3 m AOD). The Fens provide a landscape of open panoramas and expansive skies where changing weather patterns have a significant effect on the visual character of the area.

Landscape and habitat are inextricably linked. In fact, EN and the Countryside Commission (CoCo) have jointly produced 'The Character of England: landscape, wildlife & natural features'. With help from English Heritage, this initiative has produced a map of England which depicts nature conservation and landscape information as a single framework of natural or character areas. This plan is found within 'The Fens' Natural Area (46) and a profile has been produced describing features of interest. These will be further developed to set objectives to maintain and enhance the value and character of the Area.

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Land is predominantly cultivated with little natural or semi-natural habitats remaining. Woodland cover is sparse with the majority of trees found lining roads, villages and estates. The Fens also support a number of habitats ranging from marshes, swamps and fen meadows to neutral unimproved or improved grasslands which add character and offer outstanding opportunities for nature conservation. Rivers, drains and ditches also exert a strong influence on the landscape.

## **2.4 Climate and River Flow**

### **2.4.1 Climate**

The climate is typical of East Anglia with very little variation in the average monthly rainfall throughout the year. The annual average rainfall is 550 mm with only a small variation across the plan area. In the summer, evaporation exceeds rainfall and the area has very little natural excess water resources. The historic trend in rainfall (Figure 2) indicates very dry periods in recent decades.

### **2.4.2 Surface Water Hydrology and River Flow**

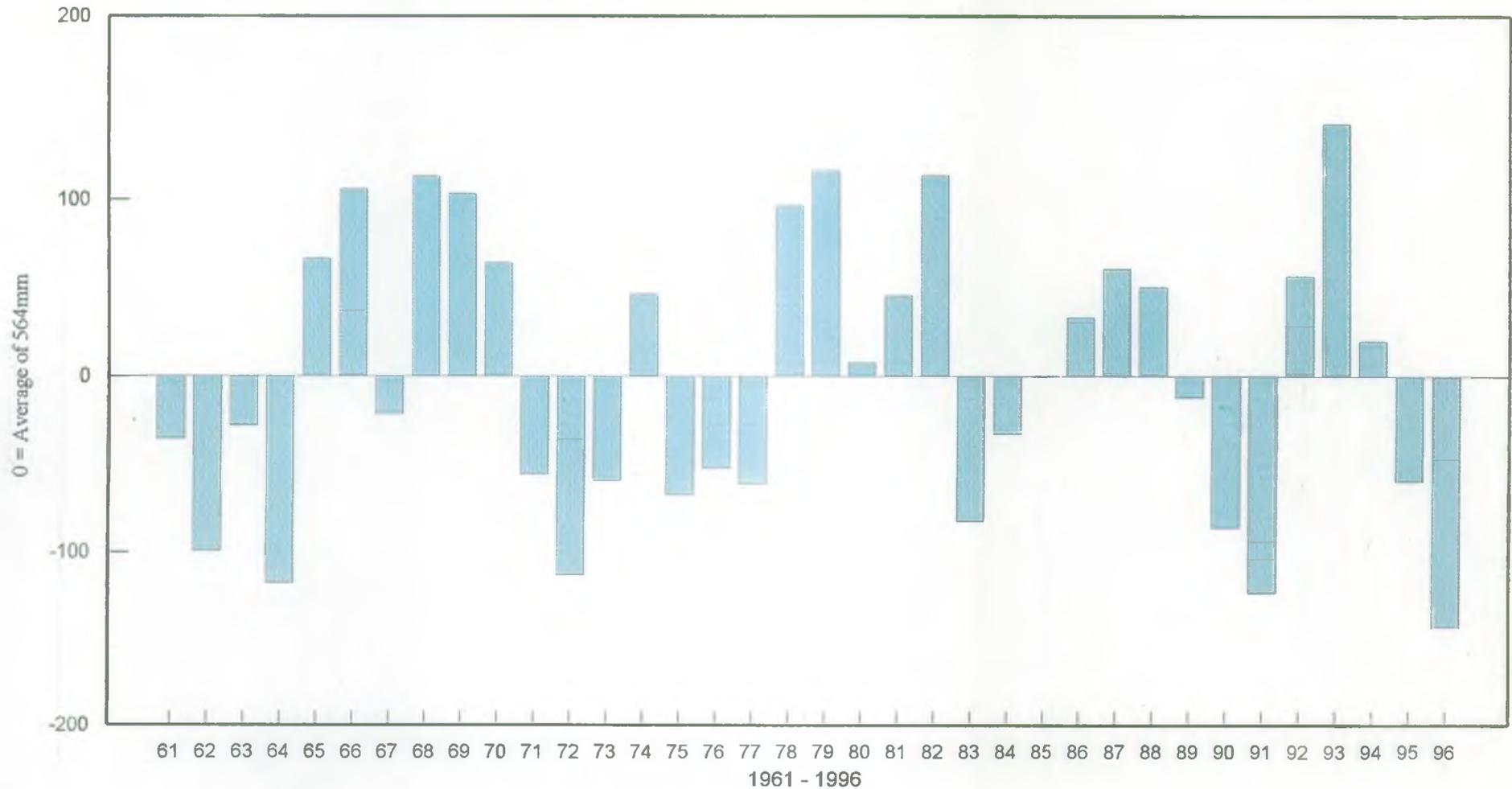
The catchment area is predominantly below sea level. Consequently, the water movement is principally governed by whether the catchment is under high flow (water drains out of the system) or low flow (where water is encouraged to drain into the system) conditions. The catchment can be split into three main drainage systems:

#### **i) The Middle Level Drains (in the west of the catchment)**

Under high flow conditions water flows from this area (705 km<sup>2</sup> in size) to the Middle Level Main Drain in the north east or the Tidal River via the Well Creek Sluice. In the summer months, water is retained in the drainage system for irrigation purposes and local water is supplemented by transfer from the River Nene through Kings Dyke at Stanground and excess water from the Old Bedford/Counterdrain.

## Figure 2. Deviation From Long-Term Average Annual Rainfall

As recorded at March raingauge TL41709650



Long term Annual Average  
1961 to 1996 = 564mm

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**ii) The Cranbrook Drain and Old Bedford/Counterdrain catchment**

Under high flows the drainage area is about 105 km<sup>2</sup> and the IDB pump excess field drain water into the Old Bedford/Counterdrain which then feeds by gravity into the Tidal River or is pumped at Welches Dam into the Old Bedford/Delph. In many summers, water is transferred by gravity into the Old Bedford/Counterdrain at Salters Lode and transferred via slackers into drainage ditches for irrigation use.

**iii) The Old Bedford/Delph, the Hundred Foot River and the Ouse Washes**

The movement of water in the two rivers and onto the Ouse Washes flood storage area is governed by five control structures: Earith Sluice which allows diversion of water from the Great Ouse into the Old Bedford/Delph, Hermitage Lock which allows a small flow from the Great Ouse into the Old West, Welches Dam which pumps water into the Old Bedford/Delph from the Old Bedford/Counterdrain, Welmore Lake Sluice which controls the outflow from the Ouse Washes and Old Bedford Sluice which allows flow from the Tidal River into the Old Bedford/Counterdrain. In addition the movement of water between the Hundred Foot River and the South Level is determined by IDB pumping and slacker control. The total local sub-catchment area is only 111 km<sup>2</sup>, but the main river systems convey water from a catchment upstream of Earith which is 3056 km<sup>2</sup> in size. The flows passing Earith average about 17.0 m<sup>3</sup>/s, with mean annual flood flows of 124 m<sup>3</sup>/s. However, the Hundred Foot River is also influenced by tidal fluctuations, which result in a temporary movement of water upstream during high 'Spring' tides.

**2.5 Water Quality & Fisheries**

Water quality is greatly influenced by the human activities within the plan area. Most of the watercourses are man-made pumped drains that are extensively used as sources for spray irrigation. Maintaining water quality suitable for spray irrigation is vital to the intensive arable farming in the area. Fisheries, amenity and conservation are equally important uses which are dependent on suitable water quality.

Maps 22, 23a and 23b show the results of the routine biological and chemical surveys for 1995 (see Section 6: State of the Environment). Biological grades (which range from A - Very Good to F - Bad) are classed 'Very Good' to 'Fairly Good'. An exception is the Hundred Foot River, which is tidally influenced and sometimes affected by brackish water.

Water quality is affected by prolific algal growth which is encouraged by a plentiful supply of nutrients and the slow flowing nature of the watercourses. Extensive duckweed cover is also a common feature of many drains and this affects oxygen concentrations by shading algae and other submerged plants.

Transfer of water from other catchments influences water quality to varying degrees but is particularly important where water is transferred from the tidal River Great Ouse. Careful control is needed to prevent the transfer of saline water which is unsuitable for spray irrigation. Inputs from other catchments also contribute to the nutrient loads particularly in the Middle Level system.

Some of the sewage treatment works (STWs) have a significant local impact on the river ecosystem, although the chemical quality of the watercourses remains suitable for agricultural abstraction. Another concern is water draining from the wetland areas of the Ouse Washes, which may be of poor quality and can have a significant impact on the quality of the Old Bedford/Delph.

Drainage of the fenland has resulted in shrinkage of the peat soils and affects leaching of minerals, such as iron, which causes localised differences in background water quality. Other factors potentially impacting on water quality are abstraction, irrigation and aquatic weed control methods.

Most of the area is non-aquifer although groundwater is found in small pockets of Lower Greensand, alluvial sands and gravels. The Agency has a duty to safeguard the quality of these groundwaters and applies the 'Policy and Practice for the Protection of Groundwater' to prevent pollution.

Despite the apparent problems with water chemistry the area supports significant fisheries. The drains within the Middle Level System support a good coarse fish stock. All the drains surveyed in 1993/94 had a Fishery Biomass Class (which ranges from A-Excellent to D- Poor) of either 'Excellent' or 'Good' (see Map 24) and many coarse fish species. Roach are the dominant species with occasional shoals of large common bream. The waters are also noted for specimen pike and zander. Although there are many pumped drains, fish movement is relatively unimpeded throughout much of the system.

Both the Old Bedford/Counterdrain and Old Bedford/Delph are good coarse fisheries (Biomass Class B). A notable feature of the Old Bedford/Counterdrain is the presence of the nationally rare spined loach which has led to its cSAC status (see 5.12). The Hundred Foot River also supports a good range of coarse fish and some brackish water species such as smelt and flounder.

## 2.6 Key details

<b>Plan Area:</b>	921 km <sup>2</sup>
<b>Main Towns (Population):</b>	March (18030)
	Chatteris (8140)
	Ramsey (7390)

**Table 1. Population Statistics:**

<b>Parish</b>	<b>Population</b>	<b>Parish</b>	<b>Population</b>
Abbots Ripton	240	Mepal	640
Alconbury (30%)	378	Nordelph	380
Benwick	710	Old Hurst	230
Bluntisham	1670	Outwell	1785
Broughton	230	Pidley cum Fenton	360
Bury	1780	Ramsey	7390
Chatteris	8140	Sawtry	5030
Christchurch	660	Somersham	3730
Colne	790	Stilton	2170
Conington	220	Stretham (30%)	444
Coveney	230	Stukeleys (30%)	768
Denton & Caldecote	60	Sutton	3090
Doddington	1670	Upwell	2200
Downham	1640	Upwood & Raveleys	1460
Downham West (10%)	25	Warboys	3270
Earith (70%)	1148	Welney	555
Elm	3530	Wentworth (30%)	60
Ely (20%)	2352	Whittlesey (70%)	10220
Farcet	1230	Wilburton (30%)	315
Folkesworth & Washingley (25%)	190	Wimblington	1570
Glatton	240	Wistow	510
Haddenham (20%)	492	Witcham	400
Holme	490	Witchford	1440
Kings Ripton	160	Woodhurst	310
Little Thetford (20%)	94	Wood Walton	210
Manea	1330	Yaxley	7330
March	18030	<b>Approx Total</b>	<b>103,595</b>

**Table 2. Estimated Waste Non Controlled Wastes Statistics**  
(See Appendix C for basis of estimates)

Agricultural Waste	440,000 tonnes (animal and cereal crop waste only)
Mines and Quarries Waste	533,000 tonnes
Sewage Sludge (application to land)	Anglian Water Services (AWS) can provide figures.

**Table 3. Controlled Waste Disposed of at Licensed Facilities**

Waste disposed of to Landfill Sites	168,000 tonnes
Waste deposited at Household Waste Recycling Centres	13,800 tonnes
Waste deposited at Transfer Stations	3,700 tonnes
Waste Deposited at Treatment Plants	80 tonnes
<b>TOTAL</b>	<b>185,580 tonnes</b>

**Table 4. Licensed Waste Management Facilities**

Licensed Landfill Sites	5
Licensed Transfer Stations	14
Licensed Treatment Plant	1
Licensed Scrapyards	13
Licensed Non Operational Landfill	1
Surrendered Landfill Licences	14
Pre COPA Licensing completed Landfill Sites	7
Registered Exempt Activities (General)	145
Registered Exempt Scrapyards	3

**Table 5. Breakdown of Registered Exempted Activities**

Description of Activity	No
Spreading of waste on agricultural land	4
Spreading of waste on land for improvement	3
Recover for reuse (of recyclables)	3
Composting of biodegradable waste	2
Beneficial use of waste	2
Storage of recyclable for reuse	5
Storage of recyclables in secure containers	1
Deposit of waste from inland water dredging	17
Storage of waste returned goods	1
Disposal of waste on site in exempt incinerator	41
Burning of waste on land where it is produced	32
Storage of waste medicines at a pharmacy	16
Storage of waste at a medical/nursing/veterinary practice	15
Storage of non-liquid waste away from site of production	1
Temporary storage of waste on site where produced	3
Scrapyards	3

**Environment Agency Organisation:**

Anglian Region (Central Area): Area office at Brampton and District Office (north) at Ely.

**Water Utility Companies:** Anglian Water Services Limited  
Cambridge Water Company

**County Councils:** Cambridgeshire  
Norfolk

**Length of Statutory Main River:** 103 km

**Length of Other Watercourse:** 180 km

**Length of Embanked River:** 101 km

**Length of Navigable River:** 55 km

**Length of Cyprinid Fishery:** 211 km (there is no salmonid fishery)

**Water Quality  
(Biological Survey):  
Biological Quality Grades 1995****Grade            Length of  
                     River (km)**

A	102.5
B	116.4
C	46.9
D	0
E	21.5

**Water Quality  
(Chemical Survey):  
Chemical Quality Grades****Grade            Length of  
                     River (km)**

A	0
B	0
C	76.3
D	92.5
E	123.7
F	0

**Sites of Special Scientific Interest: 11****Scheduled Ancient Monuments: 21**

### **SECTION THREE - ISSUES AND OPTIONS**

**In the following section, we describe issues that have arisen through the investigation of the LEAP area and through discussion between Agency staff and key external parties. The issues are grouped under generic headings. The tables summarise suggested ways of dealing with these issues and look for your comment on the best way forward.**



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## SECTION THREE - ISSUES AND OPTIONS

### 3.0 Introduction

This following section identifies and discusses the issues facing the environment in this locality and some possible options for their resolution are proposed. The options which are presented represent a range of alternative courses of action and are not generally mutually exclusive. Although many of the options are feasible, they will only be implemented following a full project appraisal.

It is hoped that you will give us your views on these issues during the consultation period which runs until the end of August 1997.

### 3.1 Summary of Issues

Map 4 highlights the location of the following issues:

#### Ouse Washes

- Issue 1: Support and develop candidate SAC
- Issue 2: Maintain flood defence capacity
- Issue 3: Draining the Ouse Washes after winter floods
- Issue 4: Limit summer flooding to Ouse Washes
- Issue 5: Levels cannot be maintained in summer for all users
- Issue 6: Abstraction by IDBs not controlled by licences, hence posing a risk to river levels
- Issue 7: Control weed growth in the Old Bedford/Counterdrain
- Issue 8: Access to Ouse Washes via the Cradge Bank

#### Biodiversity & Nature Conservation

- Issue 9: Scope for habitat protection and development

#### Land Use & Development Pressures

- Issue 10: Causeway flooding
- Issue 11: Concerns over sustaining farming in the longer term
- Issue 12: March landfill - groundwater protection
- Issue 13: Tyre dump posing pollution risk

**Old Bedford  
Local Environment Agency  
Plan  
Map 4**



ENVIRONMENT AGENCY

30  
N  
40  
50  
60

0 10km

00  
TL

TF  
00  
TL

Peterborough

90

90

80

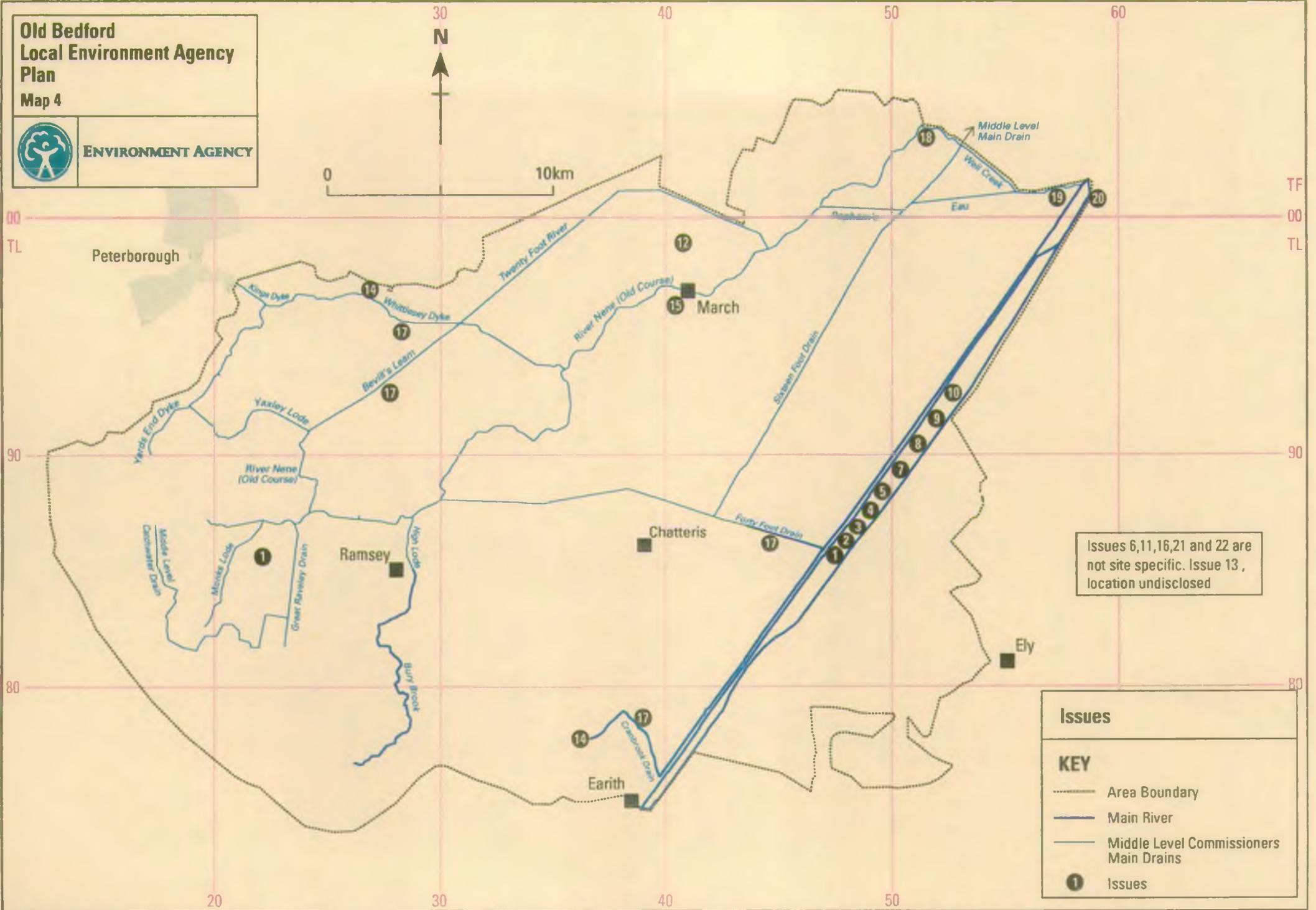
80

Issues 6,11,16,21 and 22 are not site specific. Issue 13, location undisclosed

**Issues**

**KEY**

- Area Boundary
- Main River
- Middle Level Commissioners Main Drains
- ① Issues



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**Adverse Impact Sewage Treatment Works On Water Quality**

- Issue 14: Improvement to sewage treatment works
- Issue 15: Adverse impact of combined sewer overflows in March town
- Issue 16: Adverse effects of eutrophication
- Issue 17: Failures to meet water quality objectives
- Issue 18: Un-sewered villages - Upwell and Outwell

**Recreation**

- Issue 19: Review the Old Bedford navigation
- Issue 20: Siltation in the Hundred Foot River and the Tidal River

**Needs For Monitoring & Investigation**

- Issue 21: Investigate the poor survival of fish stocks
- Issue 22: Lack of biodiversity data

**3.2 Ouse Washes**

The Ouse Washes SSSI is one of the country's few remaining areas of extensive washland habitat and is notable for its large numbers of wildfowl and waders; its large areas of unimproved neutral grassland and for the richness of the aquatic fauna and flora within its associated watercourses.

In recent years, the Ouse Washes has been subject to a number of studies. The options given below reflect many of the conclusions of these studies; most notably Ouse Washes Management Strategy, the Ouse Washes Flood Control Strategy and the Water Level Management Plan. The latter has been completed and endorsement by the relevant IDBs is being sought.

**CONSERVATION****Issue 1: Support and development of candidate Special Areas of Conservation.**

An area of the Ouse Washes, between the Old Bedford/Counterdrain and the Old Bedford/Delph, including the two watercourses, will be designated for the presence and future protection of the spined loach. (Woodwalton Fen elsewhere in the area has also been earmarked as an important site for natural fenland habitat). The Habitat's Directive states that the Agency, as the competent authority, is in the position to review consents and permissions that may influence SACs. Our conservation role is being considered at a Regional level, it is envisaged that any operational changes will be in line with the DoE

PPG 9, Water Level Management Strategies, and in the case of the Ouse Washes, conservation guidelines which are already in place.

Options	Responsibility	Costs / Constraints	Benefits
Review consents and licences issued by Agency to land owners and other water users which may impact on the cSAC  (Applies to Ouse Washes and Woodwalton Fen)	Agency, Land Owners and MLC	Agency time input  Legal enforcement and costs to parties affected by any proposed changes  Cost to owners	Conserve important areas and species of international importance
Implement findings from current spined loach investigation through changing our river management practices	Agency, RSPB and EN	Costs and feasibility associated with changing routine operations	Potential to increase survival and distribution of the species through habitat improvements
Future monitoring of spined loach status and distribution	Agency	Agency time	Continue surveying status
DO NOTHING			Unique habitat areas presently at risk may be lost

#### WATER LEVEL MANAGEMENT

##### Issue 2: Maintain flood defence capacity in Old Bedford/Counterdrain/Cranbrook system

It is necessary to maintain this system to protect against flooding and provide storage capacity for IDBs to pump into. There is little gravity discharge into the Tidal River via the Old Bedford Sluice, so to maintain levels there is an increasing reliance on Welches Dam Pumping Station. There are also seepage problems into IDB districts when levels are high.

Options	Responsibility	Costs / Constraints	Benefits
Completion of 'Counterdrain Project' which will be to examine the reliability of manual pumps at Welches Dam and possible seepage of water into IDB drains from Cranbrook Drain	Agency	Subject to project outcome  Environmental  IDB funding	Increased control of water levels
DO NOTHING		High cost of manually operated pumping station  Status quo maintained	

### Issue 3: Draining The Ouse Washes after winter floods

Because of increased siltation of the Tidal River, water levels in the Hundred Foot River do not drop low enough to evacuate water from the Ouse Washes by gravity to the retention levels required in summer. In the last few years, it has been necessary to set up temporary pumps at Welmore Lake Sluice to evacuate levels below 1.10 m AOD. The summer retention level in the Old Bedford/Delph being 0.5 m AOD.

Options	Responsibility	Costs / Constraints	Benefits
Implementation of a Tidal River Siltation Strategy - currently under preparation	Agency	Subject to outcome of Strategy	Improved gravity discharge from Welmore Lake Sluice
Re-build Welmore Lake Sluice, incorporating a pumping station 6/97 to 6/99	Agency	Cost (£5.2m)	Controlled discharge of water from Ouse Washes

Options	Responsibility	Costs / Constraints	Benefits
Investigate options for continuous water quality monitoring on the Old Bedford	Agency	Availability of suitable site	Improved information on the impact of water draining from the Ouse Washes
DO NOTHING		Water on Washes in the summer leading to a loss of grazing and significant environmental (water quality) dis-benefits	None identified

#### Issue 4: Limit summer flooding to Ouse Washes

To ensure the long term viability of the Ouse Washes both for flood defence and nature conservation.

Options	Responsibility	Costs / Constraints	Benefits
Renew Welmore Lake Sluice, incorporating pumping station	Agency	Cost	Controlled and quicker discharge of water
Minor dredging of Hundred Foot River	Agency	Cost	Increased capacity of channel
Raise Earith Sluice summer drawmark	Agency	Higher water levels in the Hundred Foot River	Less water on the Washes in the summer

Options	Responsibility	Costs / Constraints	Benefits
Divert water into Old West River at Hermitage Lock	Agency	Cost  Higher summer levels in Old West	Less water on the Washes in summer  Provide flow in Old West
DO NOTHING			

**Issue 5: Levels cannot be maintained in the summer for all users of the Old Bedford/Counterdrain.**

The Old Bedford/Counterdrain is used to supply water in the summer for the IDBs to irrigate and to top up the Forty Foot when navigation is required. The demand is considerable and with little flow coming from the Cranbrook Drain, supplementary water is transferred into the Old Bedford/Counterdrain via the Old Bedford Sluice. This can only be done when the tidal levels are suitable and salinity is below a certain threshold. Despite these measures, there are relatively long spells when conditions are not suitable and storage within the local river system is not sufficient to meet demands.

Options	Responsibility	Costs / Constraints	Benefits
Review the management rules for transfer into the Old Bedford/Counterdrain	Agency	Time and costs	Greater confidence that water resources are being optimised
Continue with current management approach	Agency	Costs of monitoring and manual sluice operations	Provision of water for irrigation and the environment
Transfer water into the Old Bedford/Counterdrain using the Middle Level transfer from Earith	Agency	Middle Level users may object as irrigators in the Middle Level paid for the Scheme	Protect the environment

Options	Responsibility	Costs / Constraints	Benefits
Better salinity monitoring between Welney and Stowbridge	Agency	Time and costs	Better understanding of salt movements in Hundred Foot River and Tidal River
Transfer water into the Old Bedford/Counterdrain using an impounding weir downstream of Black Sluice at Earith	Agency	Costs may constrain adoption	Provision of water for irrigation and the environment
DO NOTHING	--	Negative results: potential lowering of levels in dry summers	

**Issue 6: 'Slacker' abstraction by IDBs not controlled by licences and hence poses a risk to river levels**

The transfer of water from the major watercourses into IDB drains via 'slackers' is not controlled by the Water Resources Act 1991 due to their installation as, primarily, land drainage structures.

The amount that is abstracted is unknown and uncontrolled. Levels can only be maintained by the IDBs responding swiftly to the Agency's calls for farmers to voluntarily restrict their abstraction. Despite excellent communications and goodwill between the IDBs and the Agency, it is still felt that the lack of control on the system is undesirable.

Options	Responsibility	Costs / Constraints	Benefits
Request IDBs to raise the inlet levels of slackers	Agency/ IDB	Will require considerable capital investment by the IDBs to undertake this work	Slacker water abstraction would be governed by a level that restricted over-abstraction.

Options	Responsibility	Costs / Constraints	Benefits
Set-up cessation levels on slacker intakes which IDBs would 'voluntarily' adhere to (in the absence of a new Water Resources legislation).	Agency/ IDB	Cost of installation of gauge boards and enforcement	Slacker abstraction would 'voluntarily' be controlled, leading to holding levels up.
Seek legal advice with respect to legally licensing slackers in the future	Agency	Legal costs of Agency administrative costs of imposing licence conditions	Better control of abstractions
DO NOTHING	---	Lack of control on slacker abstraction will continue	

**MAINTENANCE****Issue 7: Control weed growth in Old Bedford/Counterdrain.**

The Old Bedford/Counterdrain is a statutory navigation river between the Old Bedford Sluice and Welches Dam Lock on the Forty Foot River. This stretch of river supports very heavy weed growth, particularly cott, which is difficult to control and makes navigation almost impossible. The present regime of weed control agreed with EN prevents any whole scale control taking place before September. Weed growth is associated with high levels of nutrients in these watercourses (see Issue 16 Eutrophication).

A flexible approach is needed so that contingency measures can be taken at short notice.

Options	Responsibility	Costs / Constraints	Benefits
Cut by weed boat	Agency, EN	Timing directed by EN	Lowest cost and time  Clears flood defence channel

Options	Responsibility	Costs / Constraints	Benefits
Use of weed rake machine	Agency, EN, RSPB, WWT	Timing directed by EN, RSPB, WWT  Costs and time	Removes weed to bed level  Clears flood defence channel
Control cott by placing Barley Straw	Agency	Location of straw directed by EN  Costs  Effectiveness still under debate	Water quality benefits of reducing cott
DO NOTHING	Agency	Possible flooding due to river completely choked with weed  Problems associated with decaying vegetation  This will also affect fish stock and other aquatic flora and fauna  Restricted angling, navigation and amenity to meet nature conservation objectives	

#### **Issue 8: Access to Ouse Washes via the Cradge Bank at Mepal and Welney**

The Agency owns most of the Cradge Bank and consequently it is subject to the normal maintenance operations to ensure the bank is able to perform its function. However, Wash owners use it for access to their land and other recreational users also access the bank. With the escalation in the use of four wheel drive vehicles

associated with wildfowling and other recreational users, the bank, particularly between Welney and Mepal rapidly deteriorates in winter due to heavy use.

Options	Responsibility	Costs / constraints	Benefits
Total restriction in winter months	Agency	Legal rights of access to Wash owners  Enforcement of byelaws problematic	Reduced damage to bank
Working to Ouse Washes Management Strategy Guidelines	Wash owners	Non-compliance with guidelines  Enforcement of byelaws problematic	Acceptable level of use  Agreed code of practice with key parties
Improve lower track	Wash Owners	Access in high water  Costs	No use of bank for access
DO NOTHING	Agency	Continued damage to the bank  Increased risk of flooding the washes	

### 3.3 Biodiversity & Nature Conservation

The Agency is an active partner in the development and implementation of Biodiversity Action Plans. We are leading projects for species such as the native white-claw crayfish and the otter, but our works will also impact on other globally threatened species such as the water vole, the great crested newt and the bittern. The principal problem is that, with the exception of the high profile SSSIs and nature reserves, much of the plan area encompasses the Middle Level, where very little data is available regarding the species present.

We support initiatives such as *The Wet Fens for the Future* project, whose current objective is to identify suitable sites for development. The Agency actively seeks to provide conservation advice on the scope for habitat improvements when winter storage reservoirs are planned in the Middle Level.

**Issue 9: Scope for habitat protection and development in the Ouse Washes and Middle Level**

Options	Responsibility	Costs / Constraints	Benefits
<p>Support and encourage the conservation of the range of natural habitats encountered in the area</p> <p>Particular emphasis should be placed on identifying species that are under threat</p>	<p>Agency, Wildlife groups and Land Owners</p>	<p>More information needs collecting (see Issue 22, in data monitoring section)</p> <p>Inherent costs and time for all parties involved</p> <p>Any changes may conflict with water resource and flood alleviation needs</p>	<p>The intangible value of protecting and improving the survival of threatened species and the habitat they utilise is impossible to quantify</p>
DO NOTHING			<p>Failure to undertake our statutory conservation duties</p>

### 3.4 Land Use & Development Pressures

#### WATER

#### Issue 10: Causeway Flooding

There are three roads crossing the Ouse Washes at Earith, Sutton Gault, and Welney. Most winters when the Ouse Washes are flooded the foot bridge at Sutton Gault and road at Welney are under water and for a time impassable. This presents a problem to people wishing to cross at Welney who have to take a long diversion via Mepal or Downham Market. Norfolk County Council, who are responsible for the highway have so far resisted repeated requests for a viaduct or causeway (raised road) on economic grounds.

Options	Responsibility	Costs / Constraints	Benefits
Raised causeways	Highway Authority	Costs Discharge capacity Impact on Washes themselves Agency consulted on design and land drainage consent sought	Permanent access across Washes
DO NOTHING	Highway Authority		Maintain status quo

**LAND****Issue 11: Concerns over sustaining farming in the longer term**

Agriculture dominates the local economy due to the prevalence of soils of a high agricultural value. Agricultural policy and strategy is controlled by MAFF. However, the following issues highlight where the Agency has a role. The use of the area for agriculture currently faces a number of constraints which are of concern; impoverished soils and shrinking peat layer; high demands for irrigation water coupled with abstraction being limited due to salinity and nutrient-enriched watercourses. To be competitive, farmers have to respond to market forces - principally the standards laid down by the supermarket chains.

It is felt that policies for agricultural land use should be sustainable to allow future generations to continue farming. The Agency will grant licences to abstract water if resources are available in the long-term, and will continue to review demands.

It should be anticipated that, in the longer term, farming methods and crops may change in reaction to the climate changes. Attempting to maintain the status quo in the future may not be cost-effective or environmentally suitable to farmers and regulators alike.

***Water Resources & Agriculture: There is no scope for future increases in summer abstraction***

Current agricultural demands for water are met in an average year. Demands are predicted to increase steadily in the foreseeable future. Therefore, future demands will exceed the available water resource. Major abstractors are looking at bridging this shortfall by winter storage (which can also provide greater security during droughts).

Options	Responsibility	Costs / Constraints	Benefits
Carry out a water resources review for the Old Bedford/Counterdrain catchment (including looking at the Middle Level transfer and licensed quantities)	Agency	Time and money	<p>Consideration could be given to whether the demand can be met under various climatic scenarios</p> <p>Farmers could be briefed on the climatic scenarios and hence have more realistic expectations</p>
Encourage winter storage reservoirs	Agency, land-owners	<p>Cost to landowners</p> <p>Potential (landscape) conflict with local authority planners</p> <p>There is a threshold beyond which further development of winter storage is not sustainable, eg, causing a lack of flow to flush out the system, downstream to the Wash</p>	<p>Optimises the water available throughout the year</p> <p>Sustains local farming economy</p> <p>Potential for habitat creation</p>

Options	Responsibility	Costs / Constraints	Benefits
<p>Encourage large jointly-owned landowner (winter storage) reservoirs</p> <p>A feasibility study is under way led by MLC</p>	Agency/ MLC	<p>Cost to landowners</p> <p>Environmental impact needs assessing</p>	<p>Optimises the water resources.</p> <p>Shared cost may be better for the cost benefit to landowners.</p> <p>Potential for habitat creation</p>
DO NOTHING		None	<p>Agricultural summer water needs will not be met during dry summers</p>

#### *Quality of water for spray irrigation*

Agricultural abstraction is vital to sustain farming within the area. The quality of water abstracted is equally important to ensure crops are not adversely affected. A wide range of substances may have undesirable effects and these vary depending on the crop type and depth of irrigation. To ensure abstracted water is suitable for irrigation it is often necessary to control discharges and transfers to maintain water of an acceptable quality.

In this area the parameters which are most likely to cause problems are chloride and sulphate, which contribute to high conductivities. Concentrations of chloride and sulphate vary depending on the local geology and source of water transferred. In some areas of the Middle Level System, chloride concentrations may exceed the river quality objective for spray irrigation. Individual abstractors are advised to monitor the quality of the water to satisfy themselves that it is of suitable quality for the crops they are growing.

Options	Responsibility	Costs / Constraints	Benefits
Limit quantity and quality of effluent discharges and water transfers to ensure objectives for spray irrigation are met	Agency	Dissolved substances such as chloride and sulphate cannot be cost effectively removed by the abstractor	Protection of water quality to allow a wide range of crop types to be irrigated
Monitor quality of watercourses to identify trends in quality	Agency	Cost to Agency	Provides early warning of potential problems
Monitor quality of water at abstraction points	Abstractors	Cost to Abstractors	Ensures against crop failure
DO NOTHING		Duty to protect water quality	

### Issue 12: March landfill groundwater protection/site extension

Licence held by East Waste Ltd was recently modified to require containment works to be undertaken to seal the existing area of operation from the surrounding fluvio-glacial geology. This requirement was the subject of an appeal lodged on 14 September 1995 which was determined on 19 March 1997.

The Inspector found that there was sufficient scope for doubt about the potential for pollution of groundwater without further examination of the extent and characteristics of the fluvio-glacial deposits to advise that the full containment requirements proposed should be implemented as a precaution in order to comply with the EC Groundwater Directive and dismissed the appeal.

The operator intends to extend the life of the site via overtopping of the existing deposits (in view of the appeal decision these may not be a viable option) or lateral extension onto adjacent land. Any overtopping would create an increase in the landfill capacity available in the east of the area (Fenland District) for household, commercial and industrial wastes. The area currently has a low capacity with approximately 2 years left.

Options	Responsibility	Costs / Constraints	Benefits
Overtop existing site after containment works	Operator	Cost to operator  Acceptability of pollution control proposals to Agency via working plan	Protection of groundwater from pollution from existing landfilled areas .  Increased capacity for landfilling of wastes
Extend site laterally onto adjacent land via new licence application	Operator	Cost to operator  Acceptability of licence application pollution control	Increased capacity for landfilling of wastes
DO NOTHING		Threat to ground water from existing landfilled wastes	None

### Issue 13: Tyre accumulation posing pollution risk

An illegal accumulation of tyres covering of 1.3ha of a former airfield, which is now part of a business park in the plan area, contains an estimated 1.1 million tyres (possible third largest such site in the UK). The site is currently not subject to waste management licensing.

The site is remote and concern over the fire risk and impact of run off into watercourses has been expressed. The site geology is non aquifer (Boulder Clay over Kimmeridge Clay over Amphill Clay (20-50m deep)). The site is located on a slight rise/hill and a culverted drain nearby drains to the Catchwater Drain, a tributary of the Hundred Foot River, and hence near to the Ouse Washes SSSI.

Recent experience has shown that these types of sites have a tendency to 'catch fire' when the profile of the problem is raised in the media, etc. The estimated total removal and disposal cost would be in the region of £480,000

The risk of tyre pyrolysis during a fire would lead to a release of oil, phenol and sulphides to land, with poly aromatic hydrocarbons (PAHs) and heavy metals to atmosphere. Fire fighting could result in the creation of persistent dioxins and

carcinogens which could cause ground, water and air contamination. Interim fire protection and containment is imperative.

There is an air pollution threat (smoke and ash) to local villages and nearby Ely as shown by 'windrose' data.

Minimal water firefighting would mean that the main liquid contaminant would be tarry oils which would not travel more than 30m. However, if high volumes of water were used for fighting a fire, this would cause contaminated run off to enter the culvert - without the prompt erection of earth barriers. Ground contamination after a fire would be extensive with large quantities of ash and part burnt tyres requiring disposal.

Options	Responsibility	Costs / Constraints	Benefits
Investigate options for site re-development and beneficial use of waste tyres (re-use, recycling or recovery (energy recovery))	Land owners Agency Planners	Cost to land owners Dependant on Local Planning Authorities(LPA)	Reduce or eliminate risk of water, air and land pollution from fire
Full site clearance and recovery/disposal of tyres by the Agency under Section 59 or 70	Agency	Cost to Agency £480,000 estimate	Immediate elimination of risk of water, air and land pollution from fire
Investigate interim measures for the restriction of the impact of an outbreak of fire	Land owners Agency	Cost to land owners	Reduce risk of water, air and land pollution from fire
DO NOTHING	None	Possible air water and land contamination from fire	None

### 3.5 Adverse Impact Sewage Treatment Works on Water Quality

#### Issue 14: Improvement to sewage treatment works

Within the area the majority of discharges are of good quality and meet the standard necessary to achieve the water quality objectives in the receiving watercourse. In all cases, the STWs comply with the current legal requirements. However, in many cases these standards would not ensure compliance with the WQO. In effect many discharges are over-performing at present, but could deteriorate in the future. This situation requires careful monitoring to identify candidates for future water industry investment programmes.

Somersham STW has been identified as causing poor water quality in the Cranbrook Drain. Funding for improvements has been agreed under the discretionary component of the water industry Asset Management Plan. Improvements are timetabled for completion in the period 1995-2000.

At present Whittlesey STW is being assessed as a candidate for future expenditure. The discharge causes failure of the REC target in the Whittlesey Dyke. This failure is caused by elevated ammonia levels in the discharge during the winter period.

Options	Responsibility	Costs / Constraints	Benefits
Monitor progress and effectiveness of improvements at STWs where funding has been allocated	Agency	Monitoring and data analysis	Ensures improvements are likely to meet obligations
Underpin improvements with new consent standards	Agency	Minimal administrative costs	Imposes a legal consent on the discharger
Investigate the impact of potential candidates for future Water Industry investment programmes	Agency	Monitoring, data analysis and modelling cost to the Agency	Identifies priorities for future investment

Options	Responsibility	Costs / Constraints	Benefits
DO NOTHING		Agency duty to protect water quality	

#### Issue 15: Adverse impact of combined sewer overflows in March town

Discharges from combined sewer overflows, although intermittent and usually short lived sometimes have a significant impact on the quality of the Old Course of the River Nene. The most severe effects follow summer storms when poor quality discharges reduce oxygen levels and occasionally cause fish mortalities. Several storm overflows exist throughout the town although it is not yet known which discharges are the major source of the problem. The understanding of the problem is complicated by an old drainage system and possible contamination of surface water sewers by mis-connections.

The Combined Sewer Overflows in March have been identified as unsatisfactory and are included in the programme for improvements agreed with AWS and the Office of Water Services (OFWAT). Remedial works are timetabled for completion in the period 1995-2000.

Options	Responsibility	Costs / Constraints	Benefits
Improve sewerage system	AWS	Range of options are constrained by existing sewerage system and urban developments	Improved water quality and protection of fishery
Investigate and eliminate mis-connections of foul drainage to surface water systems	AWS	Identifying individual connections is difficult  New connections may be added to the sewers	Improved water quality
Monitor water chemistry and biology	Agency	Intermittent pollution is difficult to monitor	Shows effectiveness of sewer improvements

Options	Responsibility	Costs / Constraints	Benefits
DO NOTHING		Duty to protect water quality	Funding would be available for alternative schemes

#### Issue 16: Adverse effects of eutrophication

Phosphate concentrations in the Middle Level System exceed the concentrations in the DoE guidance for the identification of Sensitive Areas (Eutrophic) under the UWWTD. Symptoms of eutrophication vary throughout the area, but include excessive growths of filamentous algae, surface cover with duckweed and algal blooms in the water column. These may affect the use of the watercourses by anglers and boat owners. Extensive weed management is carried out, including use of mechanical removal and herbicides (see Issue 7 Weed Control).

Options	Responsibility	Costs / Constraints	Benefits
Review information and promote candidates for designation as Sensitive Areas (Eutrophic).	Agency	Water flow patterns complicate interpretation of nutrient data  Modelling of the system is unlikely to be a practical option	Improved knowledge of the extent of eutrophication and potential effects of nutrient control
Designate Sensitive Areas (Eutrophic)	DoE	Costs to AWS  Benefits in terms of reduced symptoms of eutrophication are difficult to quantify	Reduction of phosphate loads from large STWs (>10,000 population)  Potential for reduction of plant growth. Lower weed management costs.

Options	Responsibility	Costs / Constraints	Benefits
Monitor causes and effects of eutrophication.		Analytical costs and resources for surveys	Improved data for decision making
DO NOTHING		Aquatic ecology may deteriorate.  Duty to protect water quality.	

#### **Issue 17: Failures to meet water quality objectives (REC targets)**

Failures of water quality objectives (WQO) are widespread throughout the slow flowing fenland drains in the area. The physical conditions and adequate supply of plant nutrients encourage plant growth. Excessive plant growth is often the cause of WQO failures and something which is beyond our control.

The most frequent cause is low dissolved oxygen concentrations, typically in August and September. Oxygen concentrations are adversely affected by large quantities of filamentous algae, algal blooms and surface scums of duckweed (see Issue 16 eutrophication). Where algal growth is dense, the algae cells themselves can exert a high BOD during laboratory analysis.

These elevated BOD values can give a mis-leading picture of the amount of organic pollution and are therefore taken into account when reviewing water quality compliance. Within the area all of the significant BOD failures are attributable to the affects of algal growth.

Ammonia failures are of concern, particularly along the Forty Foot River and Bevills Leam. High Ammonia concentrations have been recorded during the winter period. The source of Ammonia has been traced to internal drains in the New Fen area; these pump into the main drains during the winter period but the cause is not understood. Ammonia failures were also recorded in the Cranbrook drain and Whittlesey Dyke (see Issue 17 Impact of STW discharges).

Options	Responsibility	Costs / Constraints	Benefits
Investigate the cause and effects of significant REC failures.	Agency	Costs of additional monitoring	Provides information for decision making and pollution potential control options.
DO NOTHING			

### Issue 18: Un-sewered villages - Upwell and Outwell

Poor drainage conditions, in particular a high water table, often prevent septic tanks and soakaways operating effectively. In many cases overflows have been constructed directly to watercourses. Septic tank effluent is of an unacceptable quality for discharge to watercourse and where overflows exist they frequently cause aesthetic and odour nuisance as well as poor water quality. The impact is usually localised, but large numbers of un-sewered properties, such as at Upwell and Outwell, have more widespread problems.

From April 1 1996, water utility companies such as Anglian Water were given the duty to provide a public sewer where certain specified conditions are met. The Agency's role is as the final decision maker on a Company's decision to refuse a public sewer. In addition, the Agency may be approached by applicant's for first time sewerage and also by the Company for information on the environmental impact of any existing facilities.

Upwell and Outwell have been identified as requiring a sewerage system under the requirements of the UWWTD. A first time sewerage scheme must be constructed before the year 2005.

Options	Responsibility	Costs / Constraints	Benefits
Individual householders to provide acceptable sewage disposal facilities	Householders	Cost to householder	Reduced nuisance and improved water quality

Options	Responsibility	Costs / Constraints	Benefits
Provision of shared treatment plants for new and existing developments	Developers Householders	Difficulties can arise regarding responsibilities for maintenance costs, etc.	Reduced nuisance and protection of water quality
Provision of first time sewerage schemes	Local councils Householders AWS	Certain specified conditions must be met before AWS are obliged to provide a public sewer	Reduced nuisance and improved water quality
DO NOTHING		Problems will increase	

### 3.6 Recreation

#### **Issue 19: Review the Old Bedford/Counterdrain navigation, entry difficulties and the effect of low flows**

Although this water is a statutory navigation it could be argued that under the current prevailing conditions, year-round boating on Old Bedford/Counterdrain is not a sustainable activity. Entry via the Old Bedford sluice is currently not possible due to siltation in the tidal river and the link with the Forty Foot via the Horseway Lock link is only possible on the few occasions that water resources allow. In addition, the Old Bedford/Counterdrain itself is subject to low summer water levels and extensive weed growth. There is also weed growth in the Forty Foot.

Options	Responsibility	Costs / Constraints	Benefits
Review factors affecting navigation and consider options for practical future usage.	Agency, IWA	Although the water has a relatively small scale usage, any changes should be sensitively handled  Conservation and water resource implications of any recommendations	Proactive approach to an increasingly unsatisfactory boating situation  Clear strategy for Agency and users
DO NOTHING			Further deterioration of navigation

**Issue 20: Siltation in the Hundred Foot River and the Tidal River creating navigation difficulties.**

The build up of silt in periods of low flow means that navigation and evacuation of flood storage suffers. Whilst some of the problems exist outside of the area (eg, the Tidal River between Stowbridge and Kings Lynn) the management of the river system between Earith and the Denver Complex have a big impact on siltation.

Options	Responsibility	Costs / Constraints	Benefits
Denver Operational Review	Agency	Balancing water resource requirements with silt removal requirements	<p>Improved navigation in the Tidal River</p> <p>Better use of Denver to control silt levels</p> <p>More freshwater flow in the Tidal River, resulting in water transfer benefits at the Old Bedford Sluice</p>
Review Earith drawmark and/or minimise diversion onto the Ouse Washes	Agency	Lengthy procedure to change the legal operating rules	<p>Ability to flush out silt in Bedford Ouse/Tidal River</p> <p>Improved navigation in the Hundred Foot River</p>
Implement recommendations from a recently completed Siltation Study	Agency	Operational costs	Ongoing strategy will allow consistent management of silt
DO NOTHING			Probable build up of silt leading to navigation difficulties

### 3.7 Needs for Monitoring & Investigation

#### WATER

#### Issue 21: Investigate the apparent poor survival of fish stocks and habitat limitations

The routine fisheries survey programme is extending from a three to a five year cycle, this will not significantly affect the quality of the data collected. There is a clear need to undertake research into the limited survival and variable growth rates for fish in the Middle Level System. Theories regarding problems associated with the fishery range from eutrophication and low invertebrate food supply, to bird predation. Only by determining the underlying factors can a solution be suggested and possible habitat improvements implemented.

The Agency should continue to liaise closely with the angling clubs and the MLC.

Options	Responsibility	Costs / Constraints	Benefits
<p>Review fishery status of the Middle Level System in order to identify the limiting factors</p> <p>Purpose of the study will be to find ways of improving the fish stocks and the quality of fishing available.</p>	Agency, MLC and Angling Clubs	<p>Time and money to Agency</p> <p>Any improvements must not have a detrimental effect on the needs of other water users</p>	Better fish stocks through growth and survival and the potential angling value of the area is realised
Ongoing fisheries surveys are continued	Agency	At present budgeted level	Monitoring of long term trends in fishery waters
DO NOTHING			<p>Agency fails in its duty to maintain, improve and develop fisheries</p> <p>No benefit to anglers</p>

**LAND*****Wildlife*****Issue 22: Lack of biodiversity data associated with species distribution and habitat types in the area.**

The River Corridor Surveys undertaken by the Agency are limited to the main rivers in the Ouse Washes, the Forty Foot Drain to Horseway lock and the Cranbrook Drain.

At present there is very little other information on the flora and fauna within the area, in particular, the drains and aquatic habitat within the Middle Level system. This means that there is no method of evaluating the importance of the area for habitats or species and no way of measuring improvements or degradation.

There is a clear need for more data before any measure of biodiversity can be achieved in this area. Any data would assist the development and implementation of local and national Biodiversity Action Plan targets for relevant species and habitats.

<b>Options</b>	<b>Responsibility</b>	<b>Costs / Constraints</b>	<b>Benefits</b>
Undertake survey work to collect data	Agency MLC IDBs Wildlife Trusts and EN	Probably significant time and money resources needed  Such a survey would require central co-ordination.	Production of a useful dataset that would result in the protection of native species and wildlife habitats and seek to enhance the area's biodiversity
DO NOTHING			Failure of our conservation duties as a result of limited information on the flora and fauna in the area

## **SECTION FOUR - PROTECTION THROUGH PARTNERSHIP**

**This section aims to provide the opportunity to address longer term management issues in partnership with others.**



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## SECTION FOUR - PROTECTION THROUGH PARTNERSHIP

### 4.1 Introduction

Section 4 of the Environment Act identifies the principal aim of the Agency as the protection and enhancement of the environment as a whole so as to make a contribution towards achieving sustainable development. The most commonly used definition of sustainable development was provided by the World Commission on Environment and Development (the Brundtland Commission) in their 1987 Report 'Our Common Future' as: *'development that meets the needs of the present without compromising the ability of future generations to meet their own needs'*. The Government White Paper entitled 'This Common Inheritance' (Cm 1655, 1991) asserts the Government's commitment to this principle and this commitment has been reiterated in subsequent Government publications, notably in 'Sustainable Development - The UK Strategy' (1994). These Government publications recognise that achieving sustainable development will involve contributions from many groups in society.

The way we carry out all our functions with the objective of attaining sustainable development will also affect a wide range of organisations, therefore, where possible we look to do this in partnership with other organizations. We aim to develop a close and responsive relationship with the public, local authorities and other representatives of local communities, regulated organisations and public bodies with environmental responsibilities. Through our statutory responsibilities we are ideally placed to perform an important role in educating and changing attitudes and working practices to move towards attaining sustainable development. **This section provides the opportunity to address longer term management issues in partnership with others.**

We are well placed to influence many of the activities affecting the environment through the Environment Act 1995 and other legislation. For example, we are lead regulator for the water environment and also have regulatory powers over waste management activities. We, also, share with local authorities the regulation of emissions to the air and will together set and attempt to achieve local air quality standards. However, we have little direct control over the mechanisms which determine land use. This function is primarily the responsibility of local authorities through the Town and Country Planning Act 1990 and the Planning and Compensation Act 1991.

## 4.2 Partnership

Due to this division of regulatory functions, we are working closely with Local Authorities, in particular, to benefit the environment, the community in general and to develop our Local Environment Agency Plans. The Local Authorities responsible for the control of development in the plan area and their Development Plans for their district or county are set out in Section 5.2 (Table 7).

We are also working in partnership with other organisations to ensure that key objectives and long term visions can be realised and actions identified in LEAPs and Catchment Management Plans produced by the NRA are implemented. For example, a new floodplain policy document entitled 'Policy and Practice for the Protection of Floodplains' was prepared through consultation with many organisations including the Associations of County Councils and District Councils, Department of the Environment, RSPB, Wildlife Trusts, EN and the Association of Drainage Authorities.

Collaboration is also taking place within the plan area to bring forward a number of initiatives. These partnerships include the Ouse Washes Management Strategy Group, the Middle Level Conservation Forum and the Great Ouse Boating Association all of which have had involvement in the production of Water Level Management Plans.

In addition, the support of community groups, individuals, landowners and business will be needed to tackle issues such as litter, pollution and river corridor enhancement. The following organisations are considered partners on the following longer term issues and we would, also, wish to receive feedback as to their level of involvement in solving the issues described in this plan:

**Table 6. Management Issues and Partnership.**

Issue	Partner
Land Use	Local Authorities,
Sustainable Agriculture	There is cooperation between the MLC, IDB and the Agency with respect to controlling irrigation in dry summers.
Drainage/irrigation (water quality problems, weed control/pesticides)	Major landowners, National House Builders Confederation
Water Quality	Anglian Water Customer Related Environmental Enhancement Programme Asset Management Planning Fire Service Memorandum of Understanding and British Agrochemical Standards Inspection Scheme.

Issue	Partner
Water Resources	Water supply companies.
Sea Level Rise - flood risk; Emergency Planning flooding, tidal evacuation	Memoranda of understanding between the Agency and the Police.
Wildlife / Environmental Action Plans	Local Authorities, wildlife trusts, RSPB, EN.
Ouse Washes candidate SAC /Habitats Directive	Management Strategy Group coordinated by EN.
Recreation	Fenland Countryside Project lead by Cambridgeshire County Council in partnership with a number of other parties. Looking to develop a strategy for countryside recreation and access - funding has been explored and opportunities are being sought through local consultation.
Industry	Health and Safety Executive -Memorandum of Understanding, local liaison committees
Waste Management	Local Authority conferences, industry
Waste Minimisation and Recycling initiatives	Green business clubs, Local Authorities

### 4.3 Local Agenda 21 & Biodiversity Action Plans

Agenda 21 was one of the four main agreements signed at the Earth Conference at Rio by representatives of 150 countries including the UK government. It is intended to be a 'comprehensive programme of action needed throughout the world to achieve a sustainable pattern of development for the next century'. Section 11 of this document deals with resources and issues of international concern, including protection of the atmosphere, biological diversity, freshwater resources and waste management which are all areas of concern to the Agency.

In response to the Rio Earth Conference, the government has produced a number of strategy documents. These include the UK sustainable development strategy (referred to above) and more recently it has published 'Indicators of Sustainable Development in the United Kingdom'. This sets out a comprehensive list of aspects of sustainable development which should be measured and identifies indicators for each.

However, Agenda 21 emphasises the need to encourage local action to successfully resolve environmental issues and undertake activities that will aid the implementation of global environmental policy. The Agenda 21 document recognises that the participation and cooperation of local authorities will be a determining factor in meeting its objectives. It acknowledges the key contribution that local government can make, in partnership with

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all sectors of the community, to achieving environmental improvements.

At a local level, most local authorities are working with local communities, employers and industry to produce their own Environmental Reports/Action Plans and subsequently their own Local Agenda 21 programmes. These will promote sustainable development and improve quality of life. This is often referred to as 'thinking globally, acting locally'.

### ***Local Perspective***

*Cambridgeshire County Council* produced its first Environmental Action Plan in 1990 which set out the role of the Council in partnership with other organisations in protecting and enhancing the environment of Cambridgeshire. This original Action Plan has been reviewed twice with a recent draft revised Environmental Action Plan, entitled 'Environment 2000: A Strategy for Action'. It sets the environmental agenda for the Council's work from 1997 to 2001. The *Council* have also produced Annual Environment Reports to set out the state of the environment measured through the use of key indicators. The Agency has a large input into these reports, supplying information on a number of these key issues and indicators including water quality and consumption, flooding and pollution incident statistics.

*Cambridgeshire County Council* have, also, begun work on a Local Agenda 21 initiative. As part of this the County Council have produced a list of contacts for Local Agenda 21 within the County. *Huntingdonshire District Council* have set up a members group to develop an 'Environmental Strategy' to take an holistic approach to what the District presently does and will do. In *Fenland District Council* there is approval in principle to set up a working group to investigate the Local Agenda 21 initiative. The Fenland Countryside Project may be incorporated as part of it.

*Agenda 21 within Norfolk* is not developed to the extent it is in Cambridgeshire. There is, however, a Norfolk Environmental Forum/Local Agenda 21 group and a State of the Environment Report has been produced (January 1997). Kings Lynn and West Norfolk District Council has geared its Local Plan towards Local Agenda 21. Consultation on a Local Agenda 21 Strategy was carried out at the same time as the Local Plan was being prepared. The District also has an Environmental Forum and Environmental Promotions Officer.

We can play an important role in promoting sustainable development and supporting the Local Agenda 21 process. We are able to do this by contributing to the Environmental Fora mentioned, providing information on environmental or sustainability indicators, contributing to environmental education in schools and by forming partnerships in site specific projects.

In 1994 the Government published 'Biodiversity : the UK Action Plan', this document maintains the focus on local authorities as providers of the main framework within which environmental care is organised at the local level. We are part of the Anglian Regional Biodiversity Group. Guidance on biodiversity planning within East Anglia is given in the document 'Action for Wildlife in East Anglia' produced jointly by the Agency, EN, the Wildlife Trusts and the RSPB. This document gives guidance on key species and habitats, the role of Local Authorities and other bodies in the preparation of Local Biodiversity Action Plans and how these plans may be used.

Work has already begun at a local level. A Biodiversity Action Plan for Norfolk is being prepared, led by the County Council, this Plan is to include targets for specific habitats and species such as woodlands and wetlands. Targets for each of these key habitats will be progressed further by a series of workshops involving interested parties. Cambridgeshire County Council is also currently working towards producing its Biodiversity Action Plan. We also continue to provide input to the 'Wet Fens for the Future' project which is seeking to create and protect wetland areas within the Fens for the benefit of wildlife and the rural economy.

#### **4.4 Land Use Planning and LEAPs**

We take a proactive approach to our involvement in the planning system and seek to raise awareness of the value of LEAPs with regional planning bodies. We will liaise with Government Offices and provide information and responses to regional planning guidance.

Developing the relationship between Development Plans and LEAPs is important to us. Although LEAPs are non-statutory plans, they can be useful as advice or guidance to Local Authorities in preparation of their development plans and in reaching decisions on planning applications. It is important that the Agency works closely with Local Authorities in the preparation of LEAPs and seek to ensure that LEAPs are given recognition by Local Authorities. Also, it should be ensured that issues highlighted within LEAPs are, where appropriate, expressed in land use planning terms. We would welcome feedback from Local Authorities on how this relationship can be strengthened and this aspiration fulfilled.

##### ***Planning Liaison***

Land use is the single most important influence on the environment. It follows, therefore, that land use change has important implications for the environment which can be both positive and negative. The control of land use change is primarily the responsibility of local planning authorities and their local Development Plans provide a framework for

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land use change and are key considerations in the determination of planning applications

The Agency's planning liaison team is the link between the Agency's functions and the Local Authority planners. We are a Statutory Consultee on development plans and certain categories of planning application. This ensures our views are considered by the Councils prior to policies in a development plan being approved or a planning application being determined.

Government planning guidance highlights the importance of communication between us and Local Planning Authorities and the relationship between land use and environmental matters. We will endeavour to foster improved working relationships with Local Authorities to ensure an exchange of information and a regular dialogue.

The NRA (one of our predecessors) produced a set of statements in a document 'Guidance notes for Local Planning Authorities on the Methods of Protecting the Water Environment through Development Plans' which provides a general rule on the policies we believe should be included and why they are important. This guidance will be updated shortly to cover all our functions to include Waste Regulation and IPC. We have also produced a document entitled 'Environment Agency - Liaison with Local Planning Authorities' (March 1997) which explains our role and contribution to the land use planning system and is intended to help Local Authority planners in their day to day contact with us.

### ***Local Planning Guidance***

Through the planning system we can assist local planning authorities to allocate land for development by commenting on Local Plans, identify constraints and highlight how the environment can be enhanced by sympathetic development. We will continue to advise on water, waste and air quality related issues in our comments on Structure and Local Plans.

Section 105 of the Water Resources Act 1991 requires us to carry out a survey of flood defences within our area. This includes determining the 1:100 year return period floodplain level. A pilot study to determine how best this could be achieved is currently underway. It is, however, a long term project which will be on going throughout the next ten years. The results of the survey will ultimately be available to local authorities to aid the production of their Development Plans.

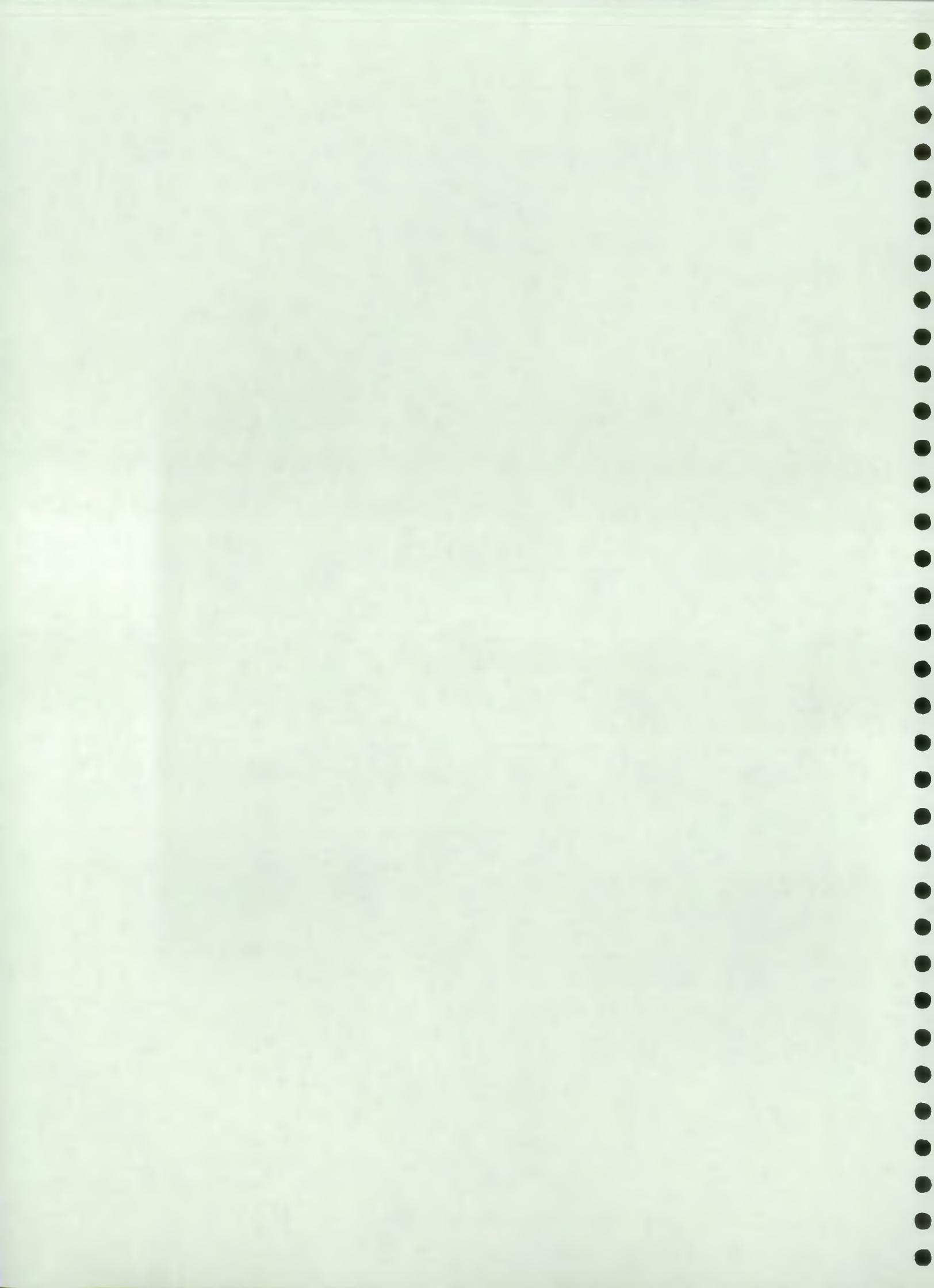
The planning system generally and the use of planning conditions in particular, should not duplicate the controls imposed by the pollution control bodies. These include the Environment Agency and local authorities in their non - planning functions such as Environmental Health. Clarification is provided in Planning Policy Guidance Note 23

**Planning and Pollution Control.**

Appendix E gives a detailed description of our concerns about development with the 'Old Bedford' Plan area on a parish by parish basis. We would like our policy statements to be adopted by LPAs when development plans are reviewed. Attention will be drawn to these statements through our planning liaison work. Any feedback on this approach would be welcome.

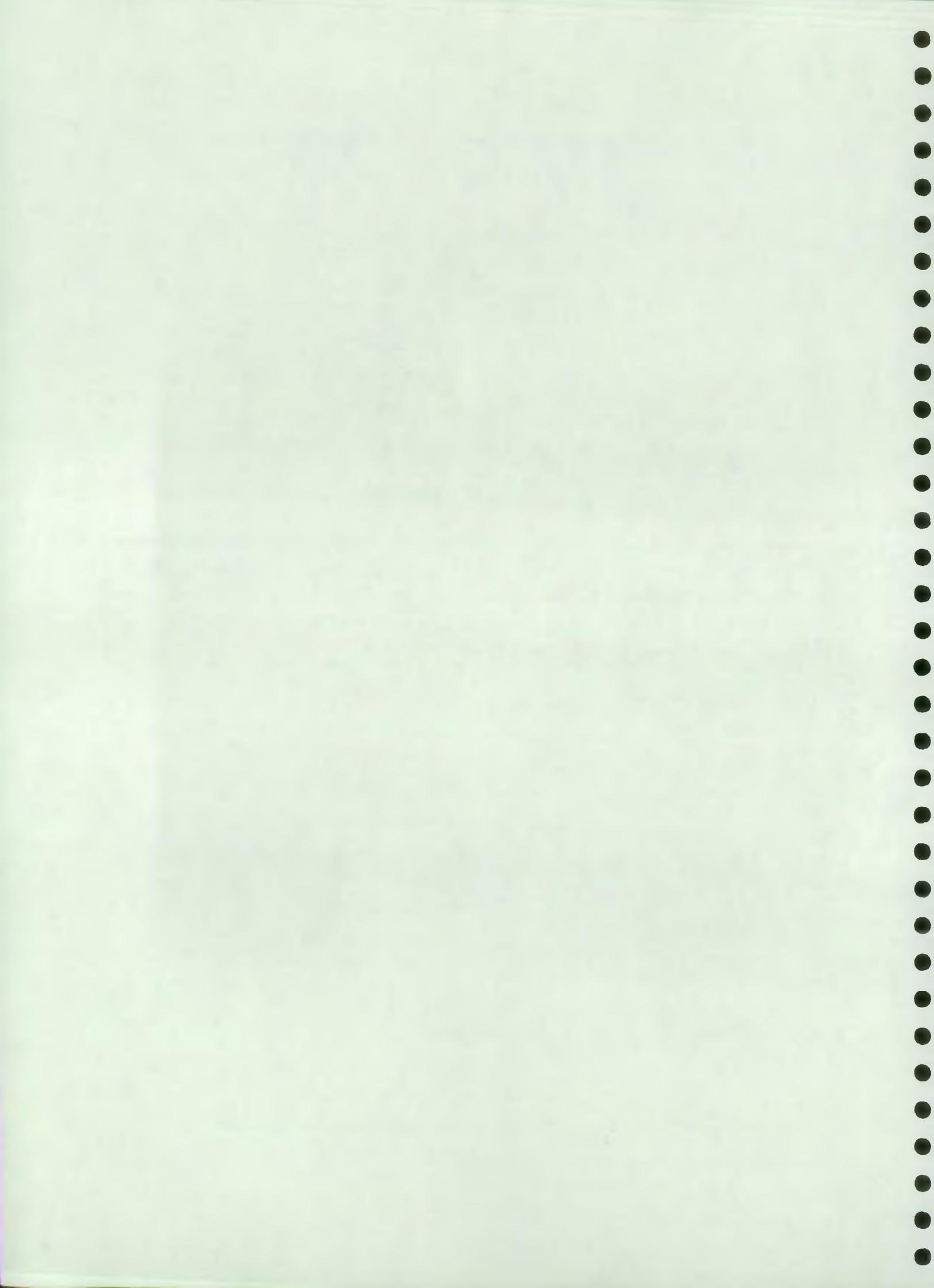
## **PART II**

### **AREA DETAIL AND BACK GROUND**



## **SECTION FIVE - USES, ACTIVITIES & PRESSURES**

**This section reviews the resources of the Area, the uses we make of the environment and the activities likely to affect it. Maps are used to enhance the information in the text. The order of these uses is not significant - many overlap and inter-relate.**



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## SECTION FIVE - USES, ACTIVITIES AND PRESSURES

### 5.1 Introduction

This sections describes all of the uses that are made of the environmental resources available. Each use will be described, as follows:

- **General Perspective** - general description of the impact of the activity;
- **Local Perspective** - a description of the level of activity in the 'Old Bedford' plan area;
- **Regulatory Framework** - a brief description of the role of the Agency and other key bodies within a legal context.

### 5.2 Urban Development and Transport

#### URBAN DEVELOPMENT

##### 5.2.1 General Perspective

The continual development of our cities, towns and countryside is the single most significant influence on the environment.

Development may include new buildings, changes in land use, the construction of new roads, the extraction of minerals or disposal of waste. In simple terms, the impact of development includes:

- (I) increased risk and occurrence of flooding due to changes in the drainage system or building in the floodplain;
- (ii) increased risk to water quality by increased pressure on the sewerage system or run-off;
- (iii) increased industrial and public water demands;
- (iv) risk to wildlife and habitats;
- (v) increased emissions to air, and,
- (vi) increased quantities of waste requiring treatment and disposal.

Development is guided by county structure plans and district local plans.

**Table 7. Development Plans**

<b>STRUCTURE PLANS</b>	<b>CURRENT STATUS</b>
Cambridgeshire County Council	Adopted 1995, Monitoring Review produced 1996.
Norfolk County Council	Adopted March 1993 Review to 2011 in progress - Consultation Draft published January 1997.
<b>MINERALS/WASTE PLANS</b>	<b>CURRENT STATUS</b>
Aggregates Local Plan - Cambridgeshire	Adopted 1991
Waste Local Plan ( <i>Issues Report</i> ) - Cambridgeshire	Published March 1997
Minerals Local Plan - Norfolk	Adopted December 1996, to be published June 1997.
Waste Local Plan - Norfolk	Consultation Draft Published November 1996. Consultation period ran to end of January 1997.
<b>LOCAL PLANS</b>	<b>CURRENT STATUS</b>
Huntingdon District Council	Adopted December 1995.
Fenland District Council	Adopted August 1993. Issues Report expected for consultation Spring 1997.
East Cambridgeshire District Council	Adopted December 1993. Issues Report published April 1996. Deposit Plan expected summer 1997.
Kings Lynn & West Norfolk Borough Council	Inspectors Report received January 1997. Adoption scheduled for Autumn 1997

### 5.2.2 Local Perspective

In the Old Bedford area, there are four Local Planning Authorities and two County Authorities with whom the Agency liaise with regard to development and planning:

Kings Lynn and West Norfolk Borough Council	Norfolk County Council
Fenland District Council	Cambridgeshire County Council
East Cambridgeshire District Council	
Huntingdonshire District Council	

Table 7 lists the most recent versions of development plans and their current status, these are guided by Planning Policy Guidance Notes (PPGs) and by the Regional Planning Guidance for East Anglia (RPG 6, July 1991).

The regional guidance identifies that: 'The overall objective for East Anglia must be to achieve environmentally sustainable growth; that is, development that meets the needs of the present without compromising the ability of future generations to meet their own needs. That objective should be a central theme in the updating of the Structure Plans'.

#### ***Cambridgeshire County Council***

The majority of the 'Old Bedford' area is covered by the Cambridgeshire County Council Structure Plan. Policies therein clearly aim to secure the best environmental strategy for the area. The key note policy related to the environment is:

*SP/1 All new development in Cambridgeshire will be expected to contribute towards achieving the guiding principle of sustainable development.*

*In the assessment of proposals, structure plan policies relating to the protection and enhancement of the environment will normally take priority.*

Further policies include advice on land use and the water environment, together with minerals and waste management.

#### ***Fenland District Council***

The Fenland District Council Local Plan identifies the need to concentrate future development in existing settlements as particularly important because of Fenland's special landscape characteristics. The area has a high proportion of good quality agricultural land and the area is very flat which means that development in general has a significant impact on the appearance of the surrounding countryside.

The market towns of Chatteris and March have been identified for concentrations of future development with 1270 dwellings proposed for Chatteris and 1735 proposed for March. Allocations for business, general industry, storage and distribution purposes include 29.2ha for Chatteris and 50.3ha for March.

The villages of Doddington, Wimblington, Manea and Benwick have been designated 'Limited Rural Growth Settlements' and have provision for between 160 - 360 dwellings each. In the smaller rural settlements only limited infilling by additional housing will be allowed.

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***Kings Lynn & West Norfolk Borough Council***

There is a small area of the Kings Lynn & West Norfolk Borough which falls within the Old Bedford plan area. There is very little development outlined for this area as it is primarily rural village settlements which have been designated for incremental infill only.

***Huntingdonshire District Council***

The Huntingdonshire District Council Local Plan identifies Ramsey as a Market Town where a comprehensive development scheme will provide 1300 dwellings by the end of the century. In addition 12ha of land has been allocated for business and employment purposes. The closure of RAF Upwood as an operational base will release, for sale, a significant number of premises into the town's housing stock. Other parts of the site are being considered for business and light industrial development.

Sawtry and Warboys have both been designated 'Rural Growth Villages' and have substantial allocations for both housing and business. A Development Brief has been prepared for the former Warboys Airfield to provide employment opportunities for the local area.

RAF Alconbury is no longer operational and the Ministry of Defence intend to dispose of it for appropriate alternative development. A Planning Brief for the airbase was prepared by Huntingdon District Council in November 1995 and addressed the need for:

- a high quality mixed development;
- a comprehensive landscape scheme to assist the assimilation of the development into the local landscape;
- the early removal of buildings, hardstandings and other infrastructure which are not identified for retention;
- convenient access by public transport;
- the provision of a rail freight link to the site;
- consideration of the use of the runway for air freight;
- development within the capacity of the highway infrastructure;
- consideration of recreational opportunities;

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- consideration of heritage potential;
  - the phased development of the site; and,
  - measures to protect the amenity of nearby residents, in particular with regard to increases in road usage and the environmental effects of air freight usage.

### ***East Cambridgeshire District Council***

The LEAP boundary encloses a part of the Isle of Ely. This area is covered by the Ely Local Plan, which forms part of the District Wide development plan for East Cambridgeshire. The Ely Local Plan identifies substantial areas for residential development within the city, much of which fall inside the LEAP area. In total 57 ha between the eastern edge of the city and the A10 Ely by-pass, have been earmarked for housing with public open space. Development briefs, which have been prepared for the sites state that an appropriate housing density is likely to be in the range of 18-25 dwellings per hectare.

The East Cambridgeshire District Council Local Plan has designated the villages of Sutton and Witchford as 'Rural Growth Settlements'. Sutton, however, has not grown in line with its status due to development constraints associated with drainage and road infrastructure.

A Development Brief has been prepared for land to the north of Main Street in Witchford, to accommodate approximately 200 dwellings and 2.4ha of community open space.

Major industrial/business developments are concentrated at Elean Business Park, Sutton and Lancaster Way Business Park, Witchford. Developments approved at Sutton include a new sales area for Cambridge Machinery Sales, a straw burning power station and a development of 12ha of glasshouses. It is envisaged that spare capacity at Sutton will be filled when new businesses are attracted by the possibility of using waste heat from the power station.

East Waste Ltd, a Local Authority Waste Disposal Company (LAWDC), submitted a planning application in June 1996, to restore a clay mineral extraction site by infilling with industrial, commercial and household waste. The application site is between the villages of Mepal and Sutton, on the former Mepal airfield.

As a statutory consultee, the Environment Agency was consulted by Cambridgeshire County Council in relation to the planning application. The Agency objected to the proposed development due to its proximity to the Ouse Washes, and in the Agency's

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opinion it posed a definite threat to the integrity of the Washes. The Agency was also concerned about the potential for leachate leaving the site and exacerbation of existing surface water drainage problems.

The application was considered by the Development Control Committee of Cambridgeshire County Council on 2 December 1996. After careful consideration of all representations received the Committee resolved to refuse planning permission.

## **TRANSPORT**

### **5.2.3 General Perspective**

Regional transport policies have been revised in the light of important developments in Government policy guidance which have highlighted the contribution of traffic to air pollution and global warming. Policies encourage greater use of public transport, walking and cycling facilities, whilst taking measures to manage traffic such that unnecessary traffic is removed from towns and villages, and routes best suited to relieve congestion are improved.

However, car ownership continues to widen due to its benefits to personal freedom and the speed and flexibility that motoring brings to business travel. This is deemed vital to the economy and therefore, appropriate provision for private road travel is recognised as being important.

There is great public concern about the environmental effects of traffic which has led to calls for more demand management and the promotion of public transport, particularly in the towns and cities, but also for more town and village bypasses.

Restrictions on public expenditure have meant the establishment of strict priorities for transport spending and the implementation of policies which use the existing road system to the fullest possible extent rather than constructing new roads and at the same time prevent unnecessary growth in traffic.

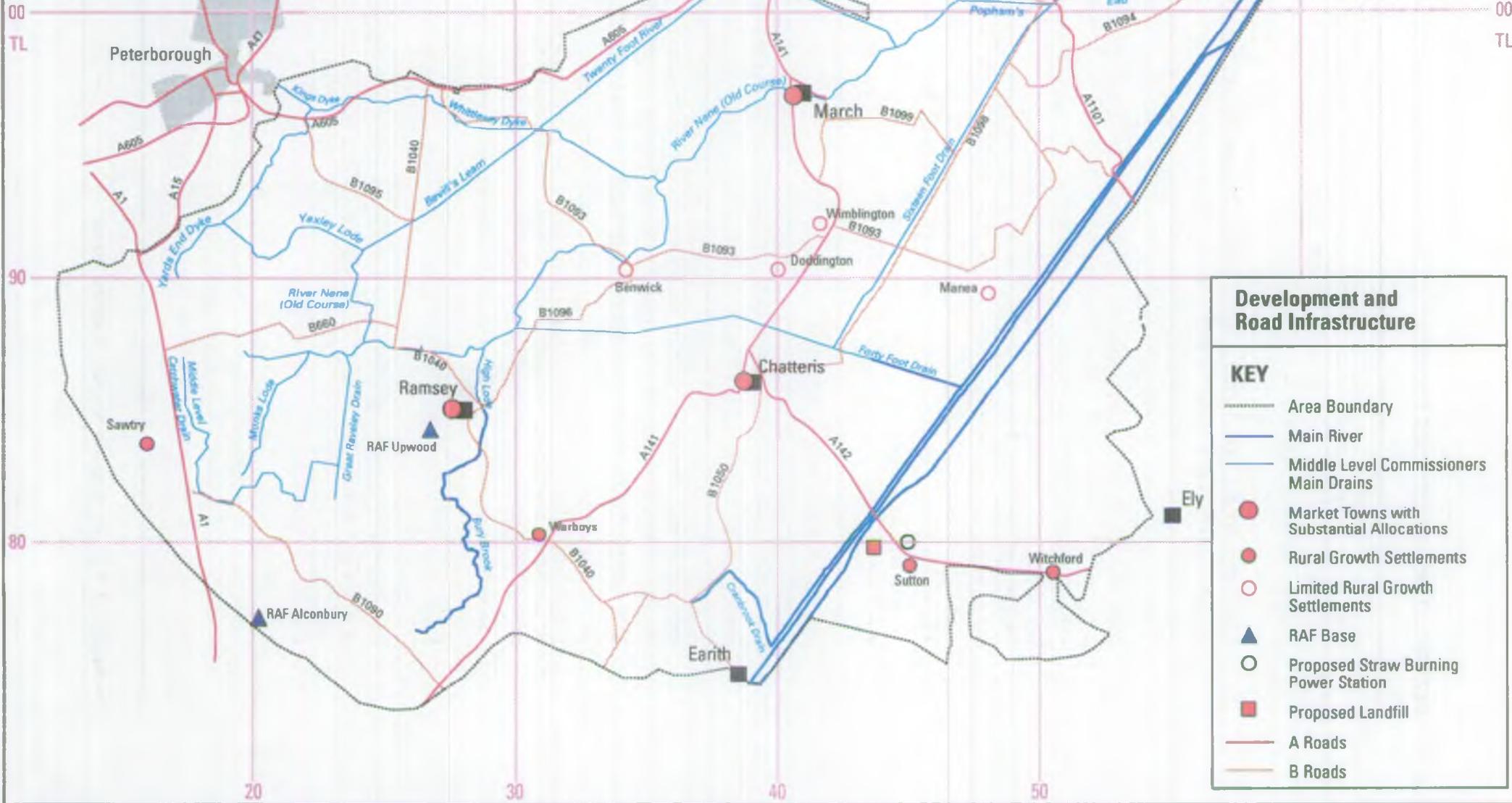
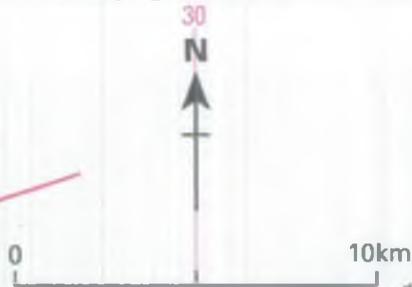
### **5.2.4 Local Perspective**

The Regional Planning Guidance for East Anglia (RPG 6, 1991) recognises the region as the gateway to Europe, and states that the main justification for improvements in the transport infrastructure is the increase in demand for the movement of goods and people, both between East Anglia and elsewhere, and internally within the region.

**Old Bedford  
Local Environment Agency  
Plan  
Map 5**



**ENVIRONMENT AGENCY**



**Development and Road Infrastructure**

- KEY**
- Area Boundary
  - Main River
  - Middle Level Commissioners Main Drains
  - Market Towns with Substantial Allocations
  - Rural Growth Settlements
  - Limited Rural Growth Settlements
  - RAF Base
  - Proposed Straw Burning Power Station
  - Proposed Landfill
  - A Roads
  - B Roads

Population and economic growth factors have combined to produce average annual traffic increases which have caused overloading on many major routes with serious congestion points within the area, which require attention.

Construction works are presently under way to upgrade the **A1** trunk road to a three-lane motorway between Alconbury and Norman Cross.

A relief road for the **B1040** at Ramsey and Bury has been identified as a requirement in association with the proposed housing and employment development. This will provide necessary access from the new development on to the highway network and provide vehicular access to the town itself. The relief road will need to be linked to a new road line from the Ramsey Road to the Wistow Toll to prevent an unduly adverse traffic impact on the village of Bury. Funding for this link road is to be sought from the developers.

The feasibility of upgrading the **A1123/1381** Huntingdon - St Ives - Sutton road, with by-passes for Needingworth, Bluntisham, Earith and Sutton, is being considered. Needingworth by-pass has been completed, Bluntisham has been recommended, but Earith is unlikely to go ahead due to topographical and consequently financial constraints associated with the river system at Earith.

Norfolk County Council is proposing to raise or realign the **A1101** Welney to Littleport road across the Hundred Foot Washes and to incorporate flood openings through the road to overcome the problem of road closures due to flooding. The road is subject to inundation and closure when the Washes, between the Hundred Foot River and Old Bedford Rivers is flooded as part of the Agency's flood control contingencies for the area. In January 1996 Norfolk County Council commissioned an hydraulic model study of the Hundred Foot River and Old Bedford Rivers together with the Ouse Washes to assess the possible effects of the proposed road schemes and flood mitigations on the flood regime.

#### **Issue 10: Causeway Flooding**

##### **5.2.5 Regulatory Framework**

Regional guidance sets out the strategic planning framework for a region highlighting development pressures and regional strategies for various issues such as the environment and conservation, economic development, population and housing, land and minerals, and waste disposal. Regional guidance for East Anglia is contained in RPG 6. This guidance covers Cambridgeshire, Norfolk and Suffolk and provides a framework for the updating of Structure Plans up to the year 2006. This RPG follows on from the regional strategy by the Standing Conference of East Anglian Local Authorities (SCEALA). SCEALA has recently published a draft strategy for East Anglia for the period up to

2016.

The draft revised PPG 23 'Planning and Pollution Control' on Waste Issues states that the government intends to establish regional waste planning fora which can be developed from the existing Regional Planning Conferences. It is intended that these fora will comprise of the Waste Planning Authorities and the Agency, acting in consultation with industry and other interested organisations. The regional fora will assess the amount of waste being produced, trends in waste production and the need for facilities to manage this waste for the next 10 years in each Waste Planning Authority. The Agency will update this information annually. Each regional forum, with the Agency is to develop a regional view on how to deal with the waste in the region.

The control of land use, development and planning is the responsibility of Local Planning Authorities (LPAs). The Environment Agency has a responsibility to protect and enhance the environment, however it only has limited control over the way that land is developed, therefore it must work closely with the LPAs in order to achieve its environmental aims.

When making decisions regarding particular developments, LPAs should have regard to the contents of relevant development plans. The plan framework set out by the Town and Country Planning Act 1990 as amended by the Planning and Compensation Act 1991, along with the Town and Country (Development Plan) Regulations 1991 require the preparation of the following:

- (i) **County Structure Plan:** This provides the broad strategic planning framework and should ensure that the provision for development is realistic and consistent with national and regional policy.
- (ii) **District or Local Plan:** This plan is prepared by district councils and sets out detailed policies and specific proposals for the development and use of land. The local plan should be in general conformity with the structure plan.
- (iii) **Minerals Local Plan:** Minerals local plans cover the exploitation of mineral resources in detail. They should indicate the areas where provision is made for mineral working and the disposal of mineral wastes as well as the areas where mineral resources are to be safeguarded for future working. The plans should also set out development control criteria and requirements for the restoration and aftercare of such sites.
- (iv) **Waste Local Plan:** The draft review of PPG 23 'Planning and Pollution Control' on waste issues states that Waste Planning Plans should 'address the issues of provision of sites for waste facilities'. Sites for such facilities do not have to be identified, but where they are not, the failure to identify sites must be justified.

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Where sites are not identified a criteria based approach should be adopted which would provide criteria against which proposals can be assessed.

The policies in these plans will guide the way that land is developed. The Agency advise planning authorities to encourage them to adopt policies which protect the environment from harmful development. The Agency will reinforce these policies, where possible, when it comments on planning matters. LEAPs can be considered as complementary to the Statutory Development Plans of planning authorities and by clearly stating the vision and actions needed to achieve it, LEAPs will make a positive input to the formal planning process.

The Environment Agency is a statutory consultee to LPAs and advises on all proposals which may have an impact on the environment. The Agency's development control objectives both in terms of responses to Development Plan consultations or specific planning applications should be derived from Agency policies (see Section 4 and Appendix E).

Traffic emissions are regulated by the Department of Transport who enforce controls on vehicle manufacturers with the Police controlling actual emissions from vehicles.

### **5.3 Power Generation and Industry**

#### **POWER GENERATION**

This section considers industrial and power generation processes which can impact upon the environment in a number of ways, ie, emissions to air, solid waste disposal to land and effluent disposal to the water environment.

#### **5.3.1 General Perspective**

Power generation processes contributes to the national and international issue of acid rain generation and can also impact upon local air quality through the release of combustion gases and particulates.

The Environment Agency supports the Government's development of renewable energy sources wherever they have prospects of being economically attractive and environmentally acceptable. Renewable energy sources include water (hydropower, wave and tidal), wind and energy derived from waste treatment.

Waste treatment as a means of producing renewable energy includes landfill gas from waste disposal sites, bio-gas projects and the burning of waste biomass materials. It must be ensured that any byproducts produced do not pollute the environment.

### 5.3.2 Local Perspective

There are proposals to construct a straw burning power station on a site near Sutton in Cambridgeshire within the East Cambridgeshire District Council area. The site for the proposed development is the land forming part of the former Mepal Airfield, Sutton, which now forms the Elean Industrial/BusinessPark. The straw burning power plant will occupy 4 ha of the site.

The plant would produce about 31 megawatts of electrical power from the burning of straw. The traditional method of disposing of straw has, of course, been burning in the field but this is now banned under UK legislation. Using straw as a renewable energy source reduces the necessity to burn fossil fuels to generate electricity.

The straw burning plant would utilise modern power generation technology. The basic process is the combustion of straw in a furnace, the hot gases being used to boil water and produces steam. The steam would power a turbine generator which produces electricity.

The main air pollutant from the proposed power plant would be the combustion gases. The amount of these gases that can be emitted by the plant is controlled by the Integrated Pollution Control (IPC) function within the Environment Agency.

## INDUSTRY

### 5.3.3 General Perspective

Industrial activity impacts upon the environment in many different ways such as producing waste products which require disposal to land, air and water environments.

### 5.3.4 Local Perspective

The area covered by this plan is predominantly agricultural and contains little large or complex Industry. Most of the industry is associated with agriculture. Within the area, there are only three processes that have (IPC) authorizations from the Environment Agency under **Part 1 of the Environmental Protection Act (EPA90)**:

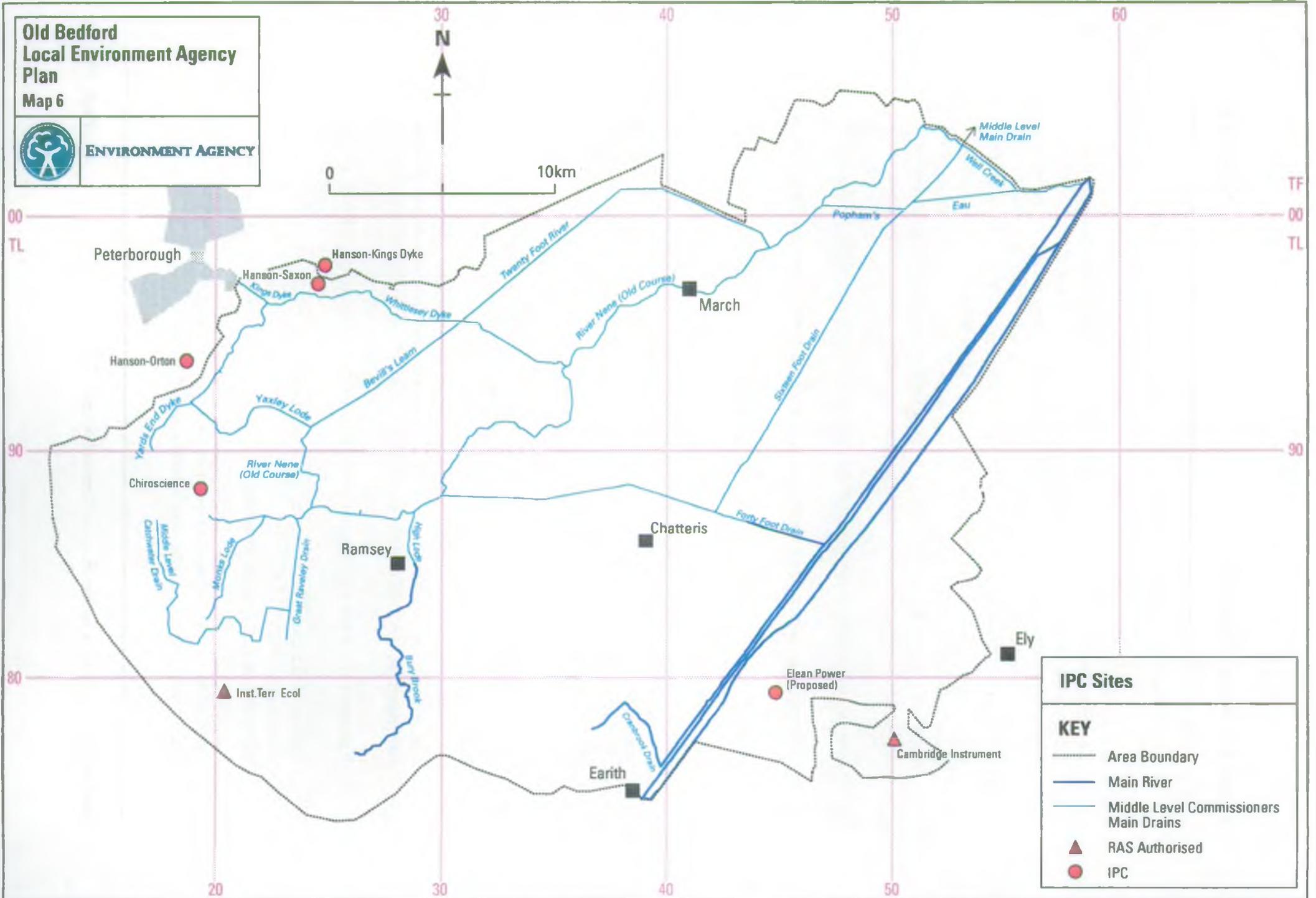
Hanson Brick Ltd, Saxon Works, Whittlesey:	<i>Ceramic Process</i>
Chiroscience plc, Holme:	<i>Organic Chemicals Manufacture</i>
Elean Power Ltd, Sutton, near Ely:	<i>Combustion Process</i>

In addition to the above, there are also two other authorised processes just beyond the area of this plan which can have an influence on the environment within the plan area.

**Old Bedford  
Local Environment Agency  
Plan  
Map 6**



**ENVIRONMENT AGENCY**



**IPC Sites**

**KEY**

- Area Boundary
- Main River
- Middle Level Commissioners Main Drains
- ▲ RAS Authorised
- IPC

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These are Hanson Brick Limited's King's Dyke Works at Whittlesey and Orton Works at Yaxley.

These represent the only significant industrial releases to the environment within the area. These processes release quantities of oxides of nitrogen, carbon and sulphur (from combustion), volatile organic compounds, and halogens into the air. These processes do not have significant discharges of effluent to surface waters. Discharges to land from these processes are mainly disposed of outside of process but within the area by specialist contractors. The location of these sites are shown on Map 6.

However, within the area there are other smaller, less polluting processes which are controlled for releases to air only by the Local Authorities under the EPA90. Regulation of discharge to controlled waters from such processes remain the responsibility of the Agency under *Water Resources Act 1991*.

The following gives a fuller description of the processes at the three IPC processes:

**HANSON BRICK LIMITED, SAXON WORKS, WHITTLESEY:**

***Description of Process***

The process is the manufacture of 2.5 million clay bricks per week.

The ceramic bricks are manufactured by firing Lower Oxford clay excavated from adjacent pits. This clay contains about 5% by weight of organic material which contributes to the fuel required to fire the bricks. The additional fuel being natural gas.

Half the production at the works (1 Kiln) now uses a modified process for the preparation of the bricks. This involves the addition and mixing of various materials, many of which are by-products from other industries such as Powdered chalk, pulverised fuel ash (PFA) and metalliferous slag. This modified technique reduces the amount of oxides of sulphur and fluorides emitted to the atmosphere from the process by chemically bonding them into the brick during firing.

The kilns are transverse-arch multiple chambered Hoffman Kilns. Each kiln chamber is connected by flues. Warm air from cooling chambers being used for the progressive drying of the green bricks in other chambers. The temperature in the chamber is then increased rapidly as the 'fire' moves into the chamber from the previous chamber. The air flows are controlled to ensure that the bricks are maintained in a reducing atmosphere during this 'Coming Hot' stage. Once the chamber has reached the required temperature 'Easing' with cold air is permitted with additional fuel being added as required to maintain the 'soak' temperature (approximately 900° C) for 36 hours until firing is

completed.

When the bricks have cooled sufficiently they are removed from the kiln then stacked and wrapped for despatch.

#### ***Releases to Air***

The main emission to air is the discharge from the two kiln stacks. The main components are, apart from air and water vapour, oxides of carbon, sulphur and nitrogen, various organic substances, fluorides and particulate matter.

The oxides of sulphur, mainly sulphur dioxide, arise from sulphur bearing materials in the clay. Carbon monoxide arises from the carbonisation of carbonaceous materials in the clay. Carbon dioxide arises from the breakdown of Carbonates within the clay and the final combustion of the residual carbon in the brick. Fluorides are a natural component of brickmaking clay and are released during firing. The organic substances comprise volatile compounds driven off from the organic content of the clay during the coming hot stage of the process and include organic sulphur compounds which are responsible for characteristic 'Fletton Odour'. Particulate matter comprises mainly of soot and loose material released from the surface of the bricks.

Other releases to air comprise the exhausts from the venting systems, windblown materials and other fugitive emissions. These are predominantly particulate material.

#### ***Release to Water***

Liquid discharges arise from the watering of clay, green and fired bricks and also from contaminated surface water run off and discharge to King's Dyke.

#### ***Other releases***

Where possible waste materials including material captured by the filters are re-cycled back to the process. Where this is not possible disposal is to landfill. Ash from coal and fired clay particulates are left in the kiln when fired bricks are removed, this material is then sent for landfill.

Reject fired bricks are stored prior to sale as hardcore, recycling or disposal to landfill.

**CHIROSCIENCE PLC, HOLME*****Description of Process***

Chiroscience plc. operate a small pilot plant to produce various specialist organic chemicals. The facility is a batch, multipurpose plant able to carry out development and scale up work in the fields of fermentation, enzyme extraction/purification, biotransformation and synthetic organic chemistry.

The major raw materials for the processes are delivered in appropriate containers and are stored in designated areas of the site.

The various stages of the process are carried out in the relevant reactors with the by-products and un-reacted raw materials being separated from the product by various techniques.

The waste materials and by-product are either reused in other processes or recycled or sent for off-site disposal.

***Releases to Air***

The main releases to air are various volatile organic compounds which are released during the handling of the compounds. Further releases of these compounds occur from the reaction vessels vents, but must first pass through overhead condensers and carbon absorption traps before they can be discharged to atmosphere. Releases are minimised by process operations.

The fermentation area releases carbon dioxide due to microbial fermentation process.

***Release to Water***

There is no release to controlled water.

There is no discharge to sewer.

All aqueous effluent is collected prior to disposal via specialist contractors.

***Other releases***

Solid waste containing prescribed compounds and special liquids are segregated and disposed as appropriate by a specialist contractors.

The dry waste is general process waste, packing materials and engineering scrap. This is accumulated in skips before being disposed of to licensed landfill.

There are two types of liquid waste; special aqueous waste and organic solvent waste.

These are disposed of, as appropriate, by specialist contractors.

#### **ELEAN POWER LIMITED, SUTTON**

##### ***Description of Process***

This process although authorised has yet to be constructed. The proposed plant is to generate 31 MW of electrical power from the combustion of 200,000 tonnes of straw per year in a purpose built boiler. The steam produced by the boiler will be used to drive a steam turbine generator set to produce the electricity.

##### ***Releases to Air***

The main releases to air are the products of combustion of straw, particulate matter; oxides of sulphur, oxides of nitrogen, carbon monoxide and hydrogen chloride.

To reduce emissions to air, hydrated lime is injected into the exhaust gases and reacts with the hydrogen chloride and sulphur dioxide. The dry reaction products are removed from the exhaust stream by fabric filters together with the fly ash.

##### ***Release to Water***

There is no release to controlled water.

There is a trade effluent discharge to sewer.

##### ***Other releases***

Solid waste containing prescribed compounds and special liquids are segregated and disposed as appropriate by a specialist contractors.

The dry waste is general process waste, packing materials and engineering scrap. This is accumulated in skips before being disposed of to licensed landfill.

The ash from the boilers is sold for use as an agricultural fertiliser.

### **5.3.5 Regulatory Framework**

The EPA90 sets out responsibilities for regulation and control of releases to the environment, as follows;

- (i) responsibility for regulating emissions from the 2500 (nationally) most significant polluting process sites (known as Part A prescribed processes) was assigned to the Agency
- (ii) responsibility for regulating emissions from all remaining less polluting industrial processes rests with Local Authorities (known as part B processes).

#### ***Integrated Pollution Control***

The EPA90 reassigned responsibility for regulation and control of releases to the environment, and introduced a regulatory approach to Integrated Pollution Control (IPC). Responsibility for regulating emissions from the 2500 (nationally) most significant polluting processes sites, either in terms of technical complexity in the volume or the nature of the substances handled, was assigned to the Agency (these are known as Part A prescribed processes). The Agency is required to establish that such processes meet the objective of ensuring that the best available techniques not entailing excessive cost (BATNEEC) are used to prevent pollution occurring. Alternatively, where this is not possible, minimising the pollution which may be caused by releases to the environment is required, having regard to the best practicable environmental option (BPEO) available in respect of those substances which may be released. In this context, consideration of BATNEEC and BPEO are, primarily, site specific.

#### ***District Council Control***

County Structure Plans contain policies on the need to control pollution. The Environmental Health Departments of District Councils regulate air pollution from thousands of industrial processes under Part I of the EPA90, eg, small combustion processes, mineral-works and-paint spraying.

## **5.4 Users of Radioactive Substances**

### **5.4.1 General Perspective**

Radioactive substances are present in the environment as a result of both natural processes and man's activities. The uncontrolled and incautious use of these substances can pose both immediate and long-term hazards.

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The Radioactive Substances Act 1993 (RSA93) provides for controls to be exercised over the use and keeping of radioactive materials and the accumulation and disposal of radioactive wastes. The Agency is responsible for administration and enforcement of the Act in England and Wales. This takes the form of registrations (keeping and using radioactive substances) and authorizations (accumulation and disposal of radioactive waste).

Non-nuclear sites include hospitals, veterinary practices, research centres and manufacturing sites. Discharges of radioactive waste to the environment from these sites may only be made (subject to certain exceptions) in accordance with authorizations issued by the Environment Agency under RSA93.

Nuclear sites are those licensed under the Nuclear Installations Act 1965 and include nuclear power stations, nuclear fuel fabrication and reprocessing plants.

#### **5.4.2 Local Perspective**

Within the area there are no nuclear licensed sites and are two authorizations for the accumulation and disposal of radioactive substances under the Act:

The Institute of Terrestrial Ecology, Monks Wood: *Research establishment*;  
Cambridge Scientific Instruments Ltd, Witchford: *Instrument manufacturer*.

In addition there are about 20 registrations for the use of radioactive substances. The majority of these are measuring instruments that use radioactive sources.

The presence of these sources have no measurable impact on the local environment above the naturally occurring background.

#### **5.4.3 Regulatory Framework**

The usage and disposal of radioactivity is grouped by the Radioactive Substances Act 1993 into three categories:

**Section 7** covers the registration of premises where radioactive sources may be held and supervised, and that correct procedures are in place for ensuring the safe replacement/disposal at the end of the useful life of the sources.

**Section 10** covers the registration of mobile sources, where the Operator is permitted to take radioactive sources around in his course of work. We are concerned to ensure that the holding, transportation and storage when not in use, is properly recorded and

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controlled and that correct procedures are in place for ensuring the safe replacement/disposal at the end of the useful life of the sources.

**Section 13** covers the disposal of radioactive sources, whether to air, the aquatic environment, landfill or specified depositories. We ensure that proper assessments of the impact on the environment are undertaken so that the disposal may be carried out in such a way as to prevent harm to humans or to the environment and that the disposals conform to the approved methods.

The Agency has a duty that requires regulatory assessment of radioactive substances. This controls the keeping, use and disposal of radioactive substances. The Agency is also the body currently charged with regulating such uses and with the keeping, use and disposal of radioactive substances and in particular the regulation of radioactive waste.

The Agency implements the Radioactive Substances Act 1993 (RSA93) by issuing registrations to keep and use radioactive materials and authorization for accumulation and disposal of radioactive waste. In the context of radioactivity, the guiding principle in minimising risk from exposure to radioactivity is to ensure the levels of activity used are 'as low as reasonably achievable' and the use is justified in relation to the benefit conferred. Because radioactivity can be measured accurately in very low concentrations, the standards to be achieved are high.

For nuclear sites, there are direct consultations with the Nuclear Installation Inspectorate (NII) and the Ministry of Agriculture, Fisheries and Food (MAFF). The Agency works closely with NII to ensure that Government policy objectives for radioactive waste management are achieved.

## **5.5 Mineral Extraction**

### **5.5.1 General Perspective**

The extraction of materials such as sand, gravel and limestone from quarries and mines, though important for the local economy, can damage both underground and surface water resources and can indirectly impact on water quality.

Extracted materials includes important drift geology, aggregate, mineral resources, which are used in the construction industry, such as sand and gravel, together with solid geology mineral resources used in process industries, such as clay for brick making. These are worked in the area by means of open cast (surface) extraction. Sand and gravel extraction account for the bulk of production.

Land formerly used for mineral extraction is also used in waste management activities,

most notably for landfill (see Waste treatment and disposal, 5.8).

Other disused pits are developed to create valuable open water habitats for nature conservation and recreational areas.

### **5.52 Local Perspective**

Oxford Clay deposits outcrop in the north-west near Whittlesey and are utilised for brick manufacture (see Industry, 5.3).

Many types of excavation have been used in the past as the main waste disposal route via landfill. Sites used included clay pits, road construction borrow pits and gravel quarries.

### **5.5.3 Regulatory Framework**

All County Councils within the area have produced Minerals Plans (as required under the Town & Country Planning Act 1990 in accordance with PPG12) and details are given below. The Agency is consulted on these plans.

Under the Water Resources Act 1991, dewatering of Mineral workings is exempt from abstraction licensing although notices can be served on the company to conserve water.

#### ***Minerals Local Plans***

The Cambridgeshire Aggregates (Minerals) Plan 1991, in line with both national and regional guidelines, proposes that whilst recognising the regional importance of Cambridgeshire's resources, sand and gravel extraction rates will need to be reviewed in the post 2001 period to take account of the finite nature of the resource and to take fully into account the conflict between extraction and environmental considerations. Alternatives to land won gravel extraction in the form of crushed rock and other alternative aggregates therefore need to be contemplated by producers in the interim. A reduction in void creation in the post 2001 period will reduce joint extraction and integral landfill restoration opportunities.

Clay excavation for brick manufacture in the Peterborough area has recently seen the exhaustion of several smaller quarries but the major extraction areas have extensive deposits. The deep nature of such exhausted voids and the underlying geology make them possible candidates for development as containment landfill sites. Large areas of worked out pits in the area have until recently been used for the licensed disposal of imported power station pulverised fuel ash.

The Norfolk Minerals Local Plan was adopted in December 1996 but is not yet

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published. Only a small area in the north eastern corner of the area is within Norfolk. The Minerals Plan does not identify any currently active sites or areas of investigation for future sites within the area. The most extensively worked minerals in Norfolk are sand and gravel and carstone (a type of sandstone). The County currently has landbanks of both these minerals in excess of the minimum required by the government in its planning guidance.

Norfolk County Council will seek to conserve natural resources and minimise environmental damage. This plan takes full account of national and regional policies, in particular those contained in Mineral Planning Guidance Notes. It recognises the need to rely on sources of aggregates other than land won material, including recycled material, marine dredged sand and gravel and imported crushed rock. The County Council supports the long term development of recycling markets and investments in recycling infrastructure.

## **5.6 Agriculture and Forestry**

### **AGRICULTURE**

#### **5.6.1 General Perspective**

Agriculture is the predominant economic activity and land use in Eastern England. The highly productive potential of the land often maximised by the use of intensive farming practices can have a detrimental effect on the environment.

During the last ten years there have been significant changes to the structure of agriculture in the UK, as a result of the reform of the Common Agricultural Policy (CAP) and the introduction of the General Agreement of Tariff and Trade (GATT). Consequently, production and markets are coming closer together and as the Government reduces subsidies, the farming industry has had to reduce food production in order to maintain its competitiveness.

These economic changes together with more stringent consumer requirements and legislation are likely to favour the larger producer who is market orientated and who can spread the necessary investment in capital and training over a large farming enterprise. It is envisaged that smaller arable units will decline as they amalgamate in response to the changing economic climate and this will lead to a reduced demand for labour and release of surplus farm buildings into the rural economy.

The Government has stated its commitment to the conservation and enhancement of the countryside and to its enjoyment by the public and continues to press for the incorporation of appropriate measures of environmental protection into the CAP. MAFF

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promote the view that farmers are not only food producers, but are custodians of the countryside. They must reconcile the demand for efficiently produced food with the demand for the countryside to be protected and cared for. Government policy assists farmers to reconcile agricultural and environmental objectives through a combination of guidance, protection measures and agriculture support schemes where there are financial incentives to protect the environment.

For example, the current set-aside rules impose environmental conditions which require cutting/cultivation of the set-aside green cover to be delayed beyond the May/June nesting season and also allow more flexible use of non-residual herbicides as a less damaging alternative to cutting/cultivation. The rules also require the protection of environmental features on set-aside land. In addition, farmers have the option to keep land in set-aside for one year or more providing greater opportunities to enhance their set-aside land as habitat for wildlife in the longer term. Land taken out of production under agri-environment and forestry schemes can now count as set-aside, therefore encouraging farmers to enter into these schemes.

Investigations are ongoing into the growing of alternative non-food crops on land set-aside such as industrial oils, fibres and fuels. The growing of oilseed rape as a fuel oil to substitute for diesel has not been pursued on a commercial basis in the UK. Although fibre production is increasing, it is limited to those areas where there has been investment in processing facilities. Solid biofuel production (straw, short coppice rotation) is being developed. However, because of the high cost of transport, production and use will be local to biofuel burning power stations.

In future set-aside is unlikely to be seen in the context of surplus unproductive land, but land that is being positively managed to provide conservation benefits or industrial crops.

### **5.6.2 Local Perspective**

The majority of the Old Bedford area is peat fenland and is recognised as comprising some of the most fertile and productive agricultural soils in Britain. The area comprises 75.8% of Grades 1 and 2 land (Map 7), compared to England as a whole which comprises only 16.1% of these top quality grades.

In 1995, the total agricultural area (see Table 8) in the Old Bedford River area extended to 78,918ha. Of this total, 81.9% was used for cropping/fallow with a further 8.1% temporarily set-aside from food production - the majority of which is likely to be classed 'best and most versatile' (ie, Grades 1, 2 and 3a). Although set-aside land is not currently in use for agricultural production, it is MAFF policy to safeguard it for the benefit of future generations. However, as discussed as part of the 'Wet Fens for the Future' project, new wetlands could be developed on such land if it can be reverted back to agriculture

as necessary.

Changes in agricultural land-use between 1985 and 1995 are summarised in Table 8:

Of particular significance is the 10.8% decrease (7,800ha) in the area of cropping/fallow over the period. The principal reason for this change is the introduction of set-aside. It also due, to a lesser extent, to Government financial incentives under the Woodland Grant and Farm Woodland Premium Schemes for planting trees on agricultural land, together with the increase in farm diversification projects which take land out of use.

The amount of tree planting on agricultural land is likely to increase further as this may now be counted towards the farmers' set-aside requirements.

**Table 8. Changes in Agricultural Land-use.**

Agricultural Land-Use	1985 (Ha)	1995 (Ha)	Change 1985-1995 (%)
Crops & Fallow	72454	64654	-10.8
Grassland > 5 yrs	3409	4544	+33.3
Grassland < 5 yrs	434	498	+14.9
Rough Grazing	1867	989	-47.0
Farm Woodland	130	190	+46.1
Other Land	1206	1633	+35.4
Set-Aside	0	6411	Incalculable
<b>Total Agricultural Area</b>	<b>79499</b>	<b>78918</b>	<b>-0.7</b>

MAFF (1997)

Cropping based farms still represent the dominant 'farm type' in the Old Bedford area. This reflects the fact that the area contains a predominance of top quality agricultural soils with cropping representing the best option in terms of financial returns. For the same reasons, horticulture is the second largest 'farm type'.

The statistics describing the levels of different cropping are summarised in Table 9, which shows that total crops and fallow have reduced over the period 1985 - 1995.

The fall in cereal production can be wholly explained by European Policy on set-aside. However, its dominance in the area is unlikely to change.

The reason for the overall decline in horticultural cropping is likely to be due to a combination of environmental and economic factors. One of the prime reasons is due to the shifting demands of the market and the changing preferences of the public. Secondly, there is the issue that horticultural crops are not eligible for support payments through the EU, with farmers responding to this by replacing horticultural crops with other agricultural ones which are eligible for such payments.

Horticultural cropping is also specialist and capital/labour intensive. The horticultural market is a constantly fluctuating one and is typified by wide seasonal price variations. Consequently, many farmers in the area now prefer 'safer' and alternative cropping rotations. Farm amalgamation has also had an influence in the decline of horticulture over the 10 year period. Many small units have disappeared, leaving larger holdings which lend themselves to cropping rotations other than horticulture and which benefit from economies of scale.

**Table 9. Change in types of crops grown between 1985 and 1996.**

<i>Crop</i>	<i>1985 (HAs)</i>	<i>1996 (HAs)</i>	<i>Change 1985-1995 (%)</i>
<i>Cereals</i>	<i>44088</i>	<i>35890</i>	<i>-18.6</i>
<i>Sugar Beet</i>	<i>11494</i>	<i>11364</i>	<i>-1.1</i>
<i>Potatoes</i>	<i>6775</i>	<i>6126</i>	<i>-9.6</i>
<i>Field Beans &amp; Dry Peas</i>	<i>1473</i>	<i>4795</i>	<i>+225.5</i>
<i>Horticultural Crops</i>	<i>4859</i>	<i>3545</i>	<i>-27.04</i>
<i>Oilseed Rape</i>	<i>2970</i>	<i>1663</i>	<i>-44</i>
<i>Linseed</i>	<i>0</i>	<i>683</i>	<i>Incalculable</i>
<i>Other Crops &amp; Fallow (inc. maize)</i>	<i>796</i>	<i>587</i>	<i>-26.2</i>
<i>Total Crops &amp; Fallow</i>	<i>72454</i>	<i>64654</i>	<i>-10.8</i>

MAFF (1997)

**Old Bedford  
Local Environment Agency  
Plan  
Map 7**



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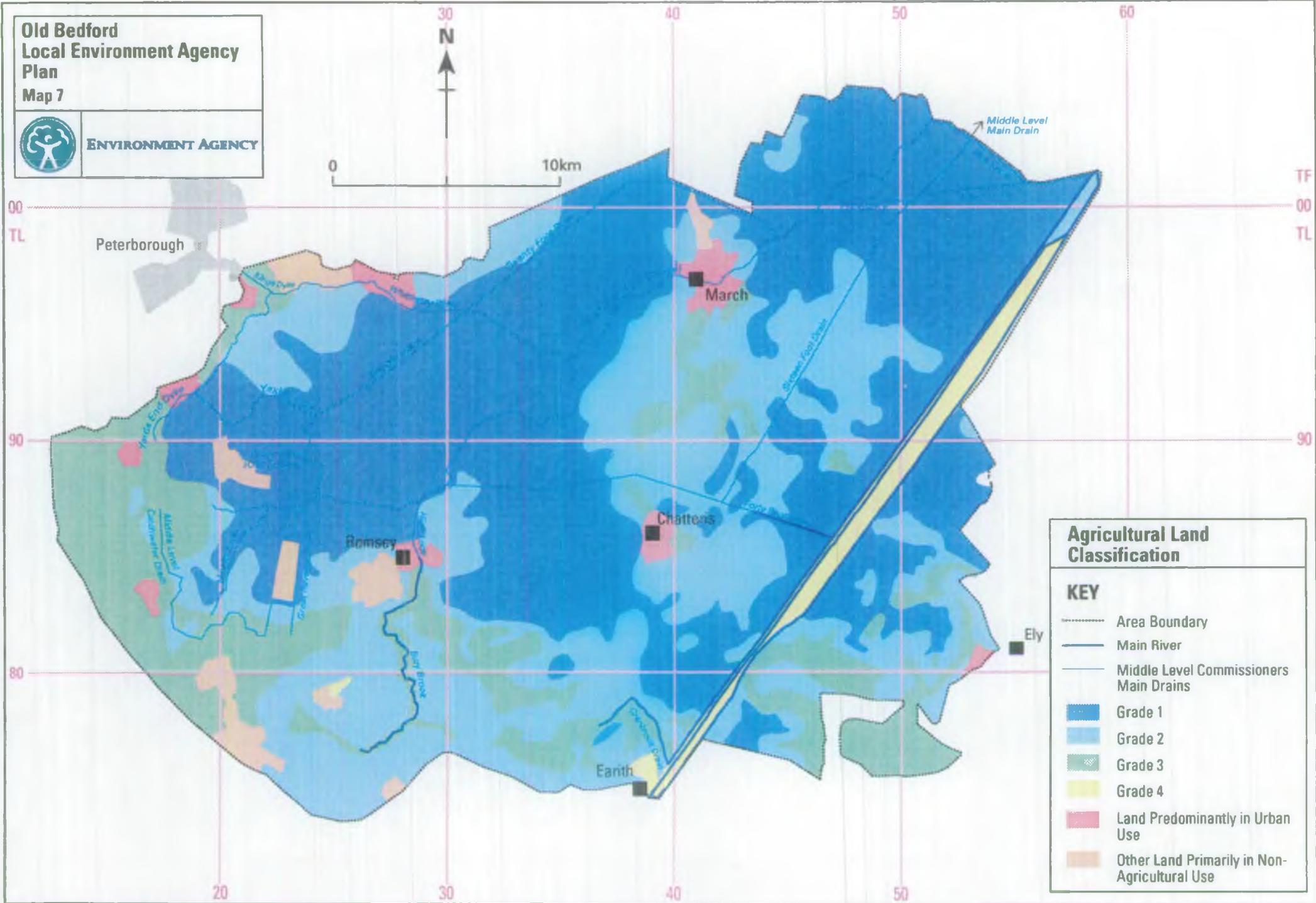
Ely

Middle Level  
Main Drain

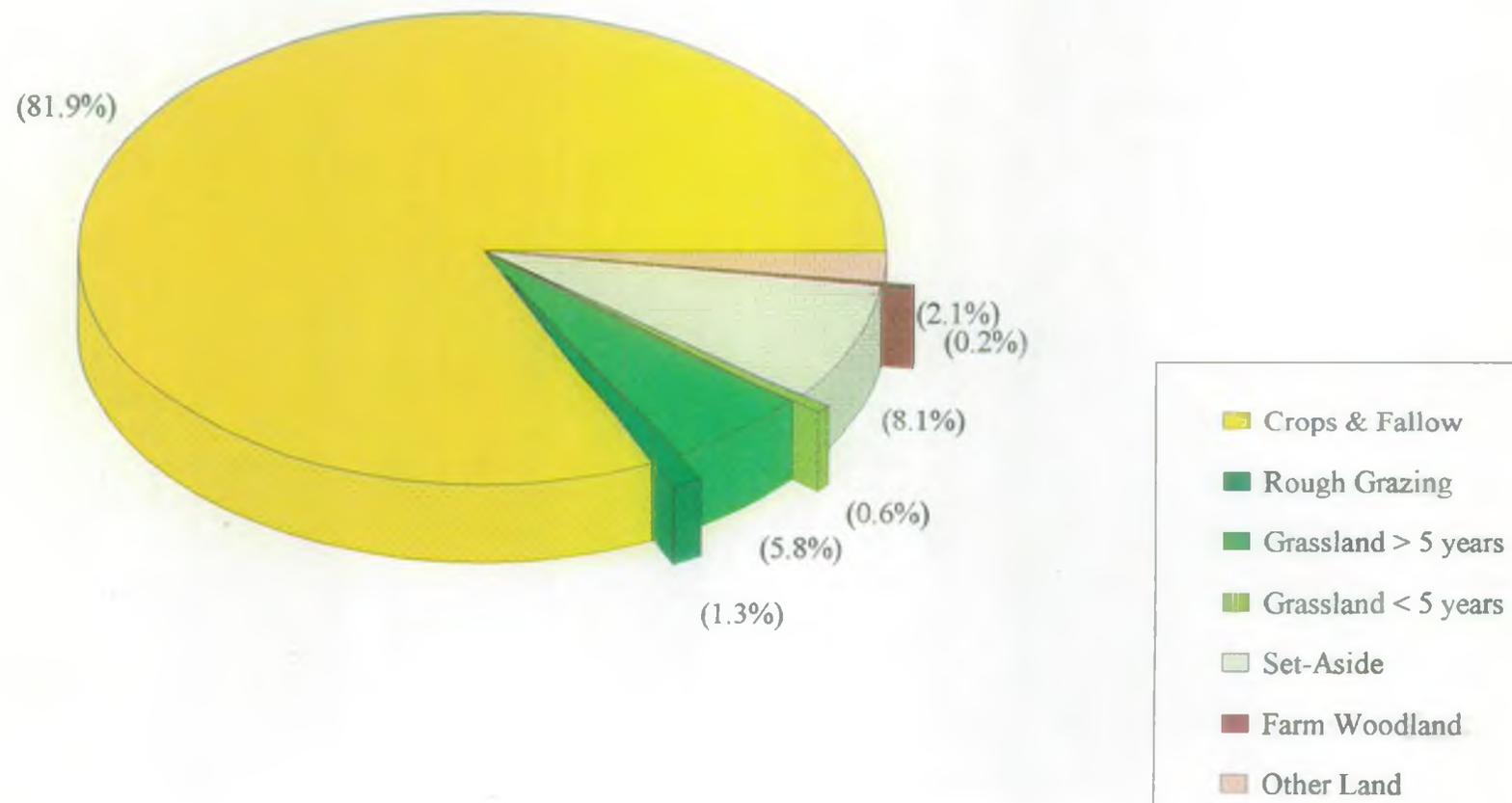
**Agricultural Land  
Classification**

**KEY**

- Area Boundary
- Main River
- Middle Level Commissioners Main Drains
- Grade 1
- Grade 2
- Grade 3
- Grade 4
- Land Predominantly in Urban Use
- Other Land Primarily in Non-Agricultural Use



**Figure 3. Agricultural Land-Use**  
Old Bedford Area



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**Issue 11: Concerns over Sustaining Farming in the Longer Term**

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**5.6.3 The Sustainability of Local Agriculture*****Water***

Water is a key ingredient to a successful and productive agricultural business. The recent spate of dry summers, combined with longer term predictions on climatic change, mean that water will continue to be a scarce resource in heavy demand. In today's highly competitive food market, consumers and retailers are increasingly demanding produce, such as soft fruit and vegetables, of high and uniform quality, as well as seeking continuity of supply. Irrigation is now an integral part of an increasingly sophisticated production system and, for many farmers and growers, reliability of water supplies is now paramount. The demand for irrigation water, by means of winter storage reservoirs, is therefore likely to increase in the future. However, this is also a finite resource and local planning authorities have observations about these reservoirs on landscape grounds, etc.

***Soil***

Agriculture in the Fens is characterised by the intensive mechanised production of root and vegetable crops on organically rich peat soils sustained by a combination of drainage and irrigation. The programme of drainage has produced some of the most productive arable land in the UK. Peat soils, historically highly productive, are central to the prosperity of farming in the Fens, but their remaining extent and quality have reduced as a consequence of the intensive use. Draining and cultivation have caused the peat to waste away over time owing to a combination of shrinkage and oxidation. This wastage is in the order of 1cm per year, which leads to falling land levels and a gradual progression from peat through organic 'skirt' soils to mineral soils.

These soil changes are gradual and it takes over 100 years for a wasted peat soil to finally become a mineral soil typical of arable land found elsewhere in Eastern England.

Ultimately the quality of fenland soils will be governed by the underlying material, which may therefore form either a silt- or clay-based soil. These gradual soil changes are inevitable and will lead to problems with moisture retention, workability, a reduction in the range of crops that can be grown and a greater need for irrigation. Consequently local downgrading of the Agricultural Land Classification (ALC) is likely to occur, eg, one or two grades.

The Royal Commission on Environmental Pollution (Nineteenth Report - 'Sustainable

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Use of Soil') acknowledges that the progressive loss of lowland peat that has occurred following agricultural drainage is irreversible in the short to medium term and states that drained peat soils should be regarded as a resource for agriculture and managed in a way that will maintain productivity for as long as possible. It also recommends that remaining areas of lowland bog and fen habitat be strictly protected.

Further decline of peat soils and organic matter levels is inevitable without fundamental changes in the farming system. Cropping will need to adapt to local circumstances as they change, but it is unlikely that high value crops will disappear altogether. Consideration also needs to be given to the climate change scenarios which predict the growing areas of different crops to shift northwards in response to a warmer climate.

Some form of re-wetting would help maintain the current extent of soils for future generations. This proposal formed the basis of a study carried out by Cranfield University to investigate a strategy for the re-creation of wet fens, as one of a number of initiatives in the search for a sustainable future for the Fens.

Wet Fens for the Future Feasibility Study addresses two management topics:

- the financial and economic feasibility of alternative wet fenland uses; and,
- the feasibility, from a soil management perspective, of returning land from re-created wet fen to arable farming, should the need arise.

It explores the opportunities for alternative non-agricultural wetland activities on fenland, such as bio-fuels, timber and related agro-industry, as well as enterprises associated with traditional fenland management such as reed. It also considers whether wetland creation would result in the irreversible loss of prime agricultural land.

### *Economics*

Due to the reliance on agriculture in the 'Old Bedford' area, structural changes in the farming industry (mechanisation and amalgamation of holdings) have had a significant impact on the local economy; a fact reflected by a recorded 36% decline in the plan area's total agricultural workforce between 1985 and 1995. Due to the unique characteristics of the Fens, the opportunities for counteracting this decline through alternative forms of development, farm diversification or rural tourism are limited, and as a consequence, much of the 'Old Bedford' area was designated as part of the **Fens Objective 5b area** in 1994 by the European Union. This initiative aims to promote alternative rural development such as access and recreation, environmental enhancements, farm shops, etc.

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Such uses can utilise the excess resources of land, buildings, capital and labour in addition to providing local employment, which in turn helps maintain the rural economy of which a healthy agriculture is a key part.

## **FORESTRY**

### **5.6.4 Local Perspective**

Due to the predominance of agriculture in the Old Bedford area, there is very little woodland cover. It accounts for less than 1% of the area. However, tree planting and woodland creation on agricultural land is likely to increase in the future as farmers can count these schemes towards their set-aside requirements.

Cambridgeshire County Council has been actively encouraging farmers in the county to make use of financial incentives and grants to create woodland areas on their land. Bearts Farm, Manea, owned by the County Council's Farms Estate, is one recent scheme. A new 5ha woodland was planted with some 9000 broad-leaved trees and shrubs with the aim of creating wildlife habitats, pleasant walks and landscape enhancement, thereby making provision for informal public recreation. County Farms Estate has also assisted in the creation of more than 20 similar sites across Cambridgeshire.

There are some notable ancient woodland areas within the area, the most substantial being Monks Wood at Abbots Ripton. It is the site for the Research Centre of the Institute of Terrestrial Ecology, but is owned and managed by EN. Monks Wood is designated as a SSSI and was declared as a National Nature Reserve in 1953. It is one of the best examples of lowland ash-maple and oak-hazel woodland remaining in Britain. The wood covers 160ha, and although there is some evidence of Romano-British cultivation, it seems certain that most of the area has been continuously wooded since Domesday and probably since the end of the last ice-age. For hundreds of years the traditional management was coppiced with standards, cut on a 20 year rotation. This was interrupted during the first world war when a large part of the wood was clear-felled for timber. The present management aims to allow most of the area to develop as high forest with about 20 acres being cut as coppice in the traditional way.

Aversley Wood is smaller, covering 60ha and is also a SSSI. This is another ancient woodland site dominated by ash-maple woodland on heavy clay soils. The management includes coppice-with-standards and areas of high forest. The wood also contains small areas of grassland, a stream and several small ponds. Aversley Wood is managed by the Woodland Trust.

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### 5.6.5 Regulatory Framework

MAFF promote a number of measures to encourage farmers to conserve and enhance the rural environment and its nature resources. The following schemes offer incentives to farmers to manage their land beyond normal good practice in a way which delivers greater environmental benefits: Environmentally Sensitive Areas Scheme, Nitrate Sensitive Areas, Nitrate Vulnerable Zones, Habitat Scheme, Countryside Access Scheme, Organic Aid Scheme, Farm Woodland Premium Scheme, Woodland Grant Scheme and The Countryside Stewardship Scheme.

The *Farm Woodland Premium Scheme* is designed to encourage the creation of new woodlands on farms, both to enhance the environment and also to provide a productive alternative use for agricultural land. Annual payments are made over ten or fifteen years depending on the composition of woodland.

The *Woodland Grant Scheme* aims to encourage the creation of new forest and woodland, to provide an alternative use of land to agriculture. The scheme encourages appropriate management and aims to provide jobs and increase the economic potential of rural areas. Establishment Grants and Management Grants are paid as part of a contract under which the owner undertakes to keep the woodlands in the required condition throughout the grant period.

The *Countryside Stewardship Scheme* aims to show that conservation and public enjoyment of the countryside can be combined with commercial farming and land management through a national system of agreements and incentives. The Scheme targets eligible types of landscapes, habitats and features including; chalk and limestone grassland, lowland heath, waterside land, the coast, the uplands, historic landscapes and features, old meadows and pastures, old orchards, field boundaries, field margins on arable land, countryside around towns, new access and the repair of traditional buildings. The scheme is voluntary and participants entering the scheme receive annual payments for a ten year agreement period.

The Agency's role includes:

- the control of pollution from agricultural sources and the licensing of water abstractions under the provisions of the Water Resources Act 1991;
- the prevention of pollution through the enforcement of the Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) Regulations 1991;
- the control of land spreading of wastes as an exemption from the Waste Management Licensing Regulations 1994; and

- the licensing of schemes that impact upon the drainage of land under the Land Drainage Act 1991.

The HSE works with us in adopting a pollution prevention philosophy in respect of the storage and use of chemicals.

We aim to work with farmers and woodland managers in both a regulatory and an advisory capacity to ensure that the environment is protected.

## **5.7 Commercial Fisheries**

### **5.7.1 General Perspective**

This activity includes individuals or groups who derive all or a proportion of their income from the exploitation of fish stocks. Within the freshwater environment, there are very few people who actively seek to capture fish for selling to the market.

### **5.7.2 Local Perspective**

Eel fishing within the area constitutes the only commercial fishing activity. Each year the Agency issues licences to fishermen allowing them to set fyke nets for the specific capture of eels only. One licence per instrument is required and during the 1996 season 150 licences were sold to 10 applicants. We do not ask the applicant to specify where they intend to fish, the licence is valid for eel fishing in a particular river catchment within the Region.

However, we also lease stretches of Agency owned rivers to eel fishermen. There are four licensees who actively fish for eels in the three main waters in the Ouse Washes plus the Forty Foot Drain as far as Horseway Lock. A condition of their lease agreement with the Agency includes the compulsory use of otter guards.

No shell fisheries exist within the area.

### **5.7.3 Regulatory Framework**

Generally the licensing of commercial fish farming is undertaken by MAFF. However, the Agency is responsible for regulating commercial fishing for eels, salmon and trout in accordance with section 25 of the Salmon and Freshwater Fisheries Act 1975.

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## 5.8 Waste Treatment and Disposal

### 5.8.1 General Perspective

The wastes generated in the area and the disposal/recovery routes that are utilised are influenced by the availability and cost of disposal options. The flows of waste into and out of the area can change over quite short time periods depending on market conditions and the changes in the availability of disposal sites external to the area. Unlike the water environment, there are more acute external influences acting upon the management of wastes. Waste generation is associated with centres of population and industry and, whilst wastes from industry and commerce flow according to immediate market forces relating to the proximity and cost of disposal options, Household waste (which is collected via local authority arrangements) is delivered to disposal points under long term contracts. These arrangements for Household waste may mean that, where new sites are developed, these wastes may continue to go to the contracted disposer, even if a new site is closer to the point of waste generation or the waste management option is preferable to the existing arrangement.

There is significant private sector involvement in waste disposal, both as landfill owners and operators, with much of the waste arising collected by private operators. The County Council Waste Disposal Authority arranges for and pays for the disposal of the wastes collected by the District Councils acting as Waste Collection Authorities.

In recent years there has been a major change in the philosophy of landfilling waste. Previously a policy of 'dilute and disperse' was applied. This assumed that any leachate generated could be accepted in an aquifer, provided that no local use was threatened. However, all new sites taking any potentially polluting waste must now be designed on a containment basis in order to protect all groundwaters, as required by the EC Directive (80/68/EEC) on the protection of groundwater quality and in line with our Groundwater Protection Policy.

Primary aggregate voids are often low lying and as such become water filled without special measures. Historically the absence of suitable fill material and legal planning difficulties regarding permanent pumping, resulted in an abundance of water filled pits offering wide opportunities for recreation and the creation of natural habitats for fauna and flora. Those mineral excavations most economically utilised for containment landfill will be found where extensive clay deposits, which are suitable for the engineering of containment structures, extend below the void. The suitability of mineral excavations and other areas for the deposit of waste via landfill depends upon the nature of the waste types envisaged, the underlying geology/hydrogeology, location of water abstractions and proximity to existing development. For strictly inert materials with low biological

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activity and low solubility chemical components, such as soils, the location of landfill sites is less affected by geology and groundwater protection requirements. Where the deposit of municipal and industrial type wastes is planned. Other aspects need to be taken into account, such as the engineering properties of possible in situ mineral lining materials for waste containment, the permeability and homogeneity of underlying geological units and the proximity of the location to groundwater resource areas and the threat from landfill gas migration.

### **5.8.2 Local Perspective**

The location of waste management facilities (especially landfill sites) will be determined through the Waste Local Plan process by the balance between need / economics (proximity to the centres of waste generation and the economic viability of these facilities), planning constraints and the pollution prevention constraints identified by the Agency. The variations which occur in waste stream management routes and the variable dispersion of disposal sites caused by geological constraints (particularly in the case of landfill) mean that, within the context of such a small area, as defined by a LEAP boundary, issues such as self sufficiency in waste management facilities cannot be sensibly applied.

Many types of excavation have been used in the past as the main waste disposal route via landfill. Sites used included clay pits, road construction borrow pits and gravel quarries. The utilisation of any type of void space is not now generally available, due to the need to operate landfill for the disposal of non-inert wastes on an engineered containment basis, with regard to the proximity and vulnerability of water resources and the dangers of landfill gas migration towards areas of development. This has considerably reduced the number of suitable voids able to be economically engineered and operated as landfill sites.

The relevant waste policies are detailed within the structure, minerals and waste plans (see Table 7).

Clay excavation for brick manufacture in the Peterborough area has recently seen the exhaustion of several smaller quarries but the major extraction areas have extensive deposits. The deep nature of such exhausted voids and the underlying geology make them possible candidates for development as containment landfill sites. Large areas of worked out pits in the area have until recently been used for the licensed disposal of imported power station pulverised fuel ash.

Those areas of non-aquifer geology suitable for landfill are the Gault Clay, Kimmeridge Clay, Corallian and Oxford Clay. The presence of surface drift deposits acting as minor aquifers in many of the areas of available void (usually aggregate mineral excavations),

requires that the underlying geology be suitable for engineering to form basal and side seals to guard against lateral migration of leachate. The possibility of engineering of in situ clays depends upon the nature and variability of the material on a particular site. As this is highly variable, even within geological units, it is not possible to define exact areas of engineering suitability in terms of geological outcrop.

The waste generated in the area needs to be managed in the most practicable and environmentally sensitive manner. The Agency will liaise with planning authorities and others to encourage the locations of new facilities in areas where groundwater is least vulnerable to pollution. The need to protect aquifers and watercourses from the effects of leachate pollution is recognised and the Agency will implement policies on landfill as described in the 'Policy and Practice for the Protection of Groundwater' published by the former NRA.

Waste disposal via landfill is concentrated in a few large sites within the area which accept household, commercial and industrial wastes and it is these that may pose a longer term risk to water quality, rather than smaller sites taking generally inert wastes such as soils.

The geography and transportation links available in the area mean that much of the waste arising in the North is exported to the Peterborough area and that in the West to a large landfill located just outside the area to the West of Huntingdon. One landfill serves the majority of the area to the East although the arising (Household, Commercial and Industrial Waste) is low due to the rural nature of the East of the area. Two sites to the South are currently under utilised.

#### ***Waste Management Facilities***

The locations of all existing and closed sites which have been used for waste disposal by landfilling are shown on Map 8.

The locations of all transfer stations, treatment plant and scrapyards are shown on Map 9.

Appendix C gives details of all the sites shown on Maps 8 and 9.

#### ***Major Landfill Facilities***

The main operational landfill sites for household, commercial and industrial waste are located at March, Warboys, Somersham and Grunty Fen near Ely. Table 10 gives a summary of the current status of these sites. Additional descriptive information for these sites can be provided on request.

**Old Bedford  
Local Environment Agency  
Plan  
Map 8**



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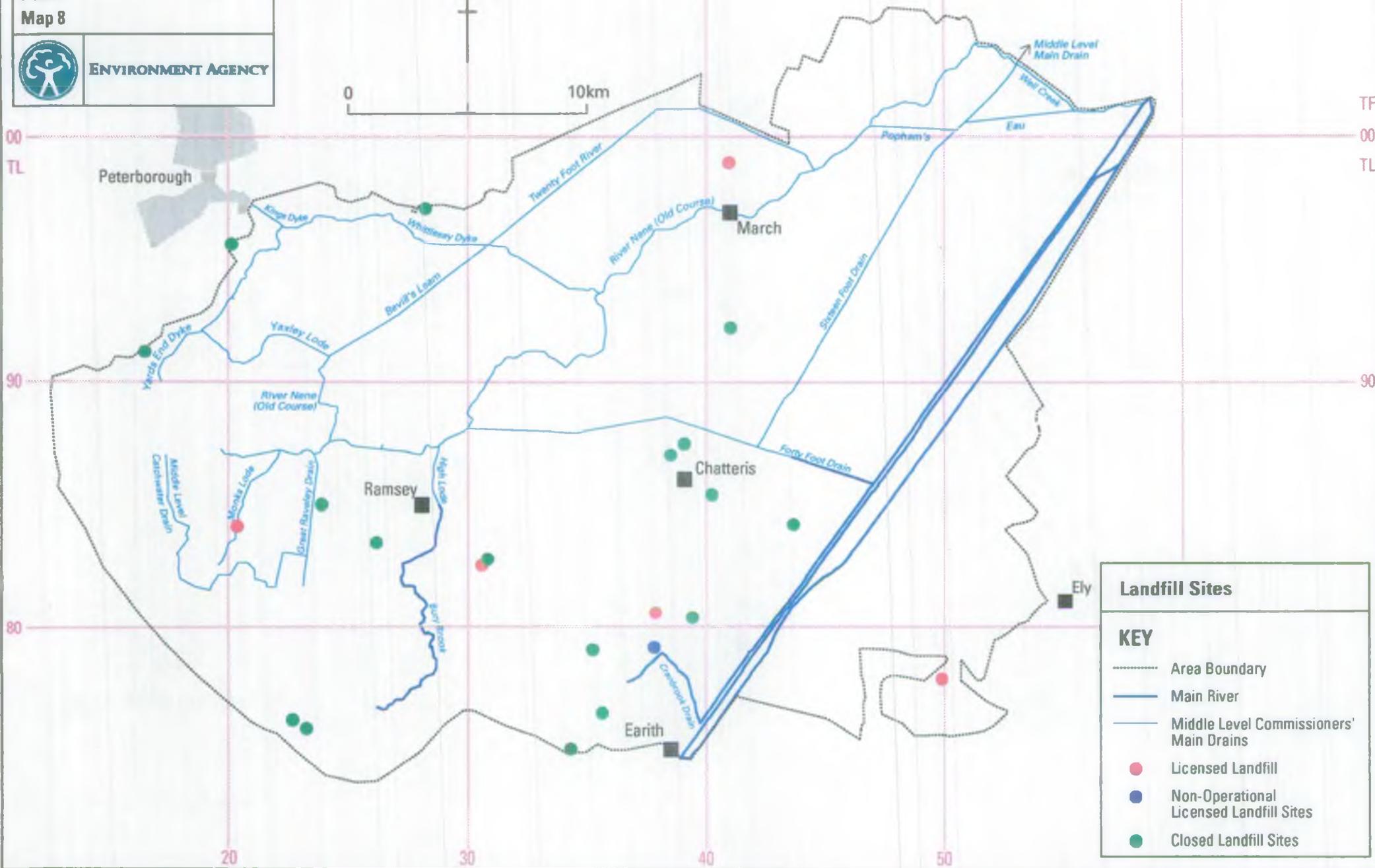
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**Landfill Sites**

**KEY**

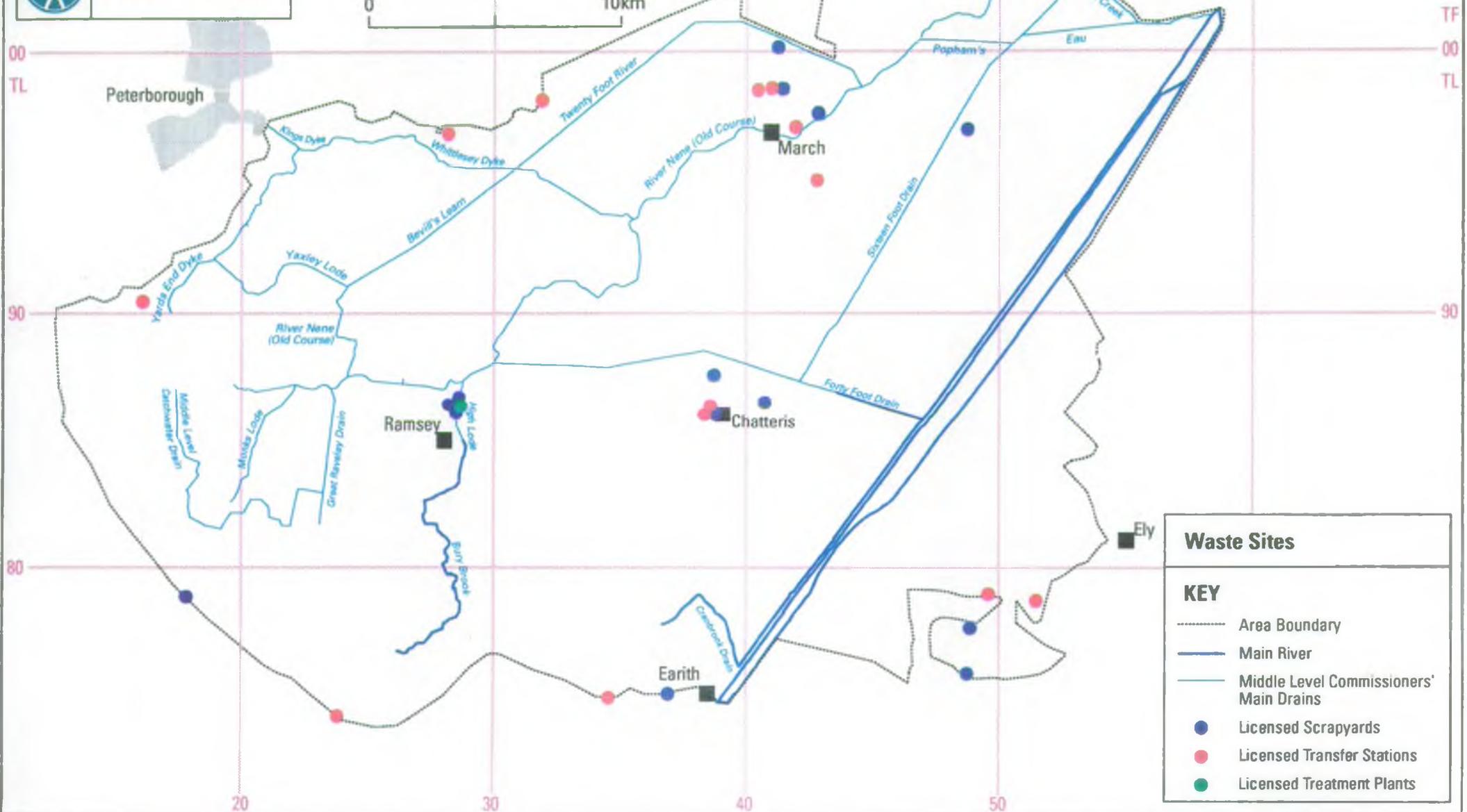
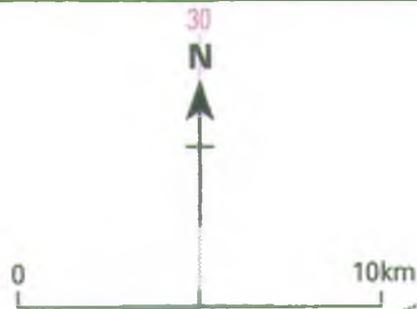
- Area Boundary
- Main River
- Middle Level Commissioners' Main Drains
- Licensed Landfill
- Non-Operational Licensed Landfill Sites
- Closed Landfill Sites



**Old Bedford  
Local Environment Agency  
Plan  
Map 9**



ENVIRONMENT AGENCY



**Waste Sites**

**KEY**

- Area Boundary
- Main River
- Middle Level Commissioners' Main Drains
- Licensed Scrapyards
- Licensed Transfer Stations
- Licensed Treatment Plants

***Flytipping***

There are few landfills in the eastern side of this area, resulting in reduced competition between landfill operators and hence higher disposal prices. This mainly rural area has, for several years, seen a relatively large number of illegal deposits, most of these concentrated around the Ely and Whittlesey areas. At least 50% of our investigations of flytipping are located in this area. The remoteness of some areas from major roads has also meant that enforcement officers have been less likely to detect illegal activities during normal journeys. A proportion of this activity relates to both permanent and vacated ad hoc travellers' sites and much originates from the Cambridge area, particularly tyres and construction/demolition wastes.

**Issue 13: Tyre Dump Posing Pollution Risk**

Experience has shown that on conviction for illegal tipping the Courts award substantially lower penalties in this area compared to penalties awarded in more industrialised areas. This has not acted as a sufficient deterrent in many cases and re-offending is regularly seen and prosecuted.

Due to the introduction of the landfill tax in October 1996, the Agency are being extra vigilant, since increased waste disposal prices are likely to increase the incidence of fly tipping.

***Exempted Waste Management Activities***

A full list of exempted waste management activities is given in Appendix C.

Sewage sludge storage lagoons used to store non-controlled wastes prior to landspreading are required to be registered as exempt waste management activities under paragraph 8, Schedule 3 of the Waste Management Licensing Regulations 1994. Until recently few of these facilities were registered. AWS are currently in the process of applying for the registration of these storage facilities.

**5.8.3 Regulatory Framework**

A more extensive description of the waste regulation responsibilities of the Agency is to be found in various Agency publications and a forthcoming report 'Waste Regulation in the Anglian Region (Central Area)' - which are available on request.

We work primarily within the framework of the EPA90 and the Environment Act 1995 in relation to the regulation of controlled wastes, which consists of household, commercial and industrial waste.

**Table 10. Description of Major Landfill Sites**

Name	NGR	Geology	Waste Types	Gas Control	Leachate Control	Ground Water Monitoring Boreholes	Problems
LS112 Hundred Road, March, East Waste Ltd	TL407988	River Terrace Deposits, Boulder Clay, Fluvio-Glacial Deposits, Amphill Clay	Household Industrial Commercial	No	Yes	Yes	Minor operational licence infringements. Evidence of impact on groundwater from historical operations
LS 121 Short Drove, Somersham, Midland Land Reclamation Ltd	TL374800	River Terrace Deposits, Oxford Clay	Household Industrial Commercial Treated Clinical	No	Yes	Yes	None
LS 197 Warboys Pit, Fenside Waste Management Ltd	TL305817	Oxford Clay	Household Industrial Commercial	No	Yes	Yes	Complaints concerning Traffic levels and vermin (no evidence found)
LS 110 Grunty Fen, East Waste Ltd	TL496776	River Gravels, Nordelph Peat, Boulder Clay, Kimmeridge Clay	Household Industrial Commercial	No	Yes	Yes	Minor operational licence infringements

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Agricultural waste, sewage sludge and mines and quarries waste are covered by other legislation.

The main functions and activities with regard to waste management are:

- the licensing of waste management activities with the imposition of appropriate conditions and their subsequent supervision;
- the registration of waste management activities which are exempted from waste licensing requirements due to nature and scale of operations;
- operation of enforcement procedures;
- administration to regulate and monitor the movement of special wastes and transfrontier shipments of wastes;
- registration of waste carriers and brokers;
- collection of information about waste arisings and maintenance of a national waste database and preparation of a waste management strategy;
- promotion of waste reduction, minimisation and recycling;
- administration and enforcement of the Producer Responsibility (Packaging) Regulations 1997;
- responding to planning consultations;
- maintenance of a public register;
- promotion of the Duty of Care; and,
- provision of waste management information & advice.

### ***Waste-water Disposal***

#### **5.8.4 General Perspective**

Watercourses (and to a lesser extent land) are 'used by man to dilute and dispose of liquid waste products. These effluents are principally treated to reduce their impact on the environment. Under particular conditions, discharges of untreated effluent also occur, eg, from emergency and storm water overflows from sewerage systems

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In rural areas such as this, many properties are not served by public utility Sewage Treatment Works (STWs) and properties make use of smaller private STWs and septic tanks. These discharge to land and/or a watercourse and can impact on ground and surface water.

### 5.8.5 Local Perspective

#### *Domestic Sewage & Industrial Effluents*

Most domestic sewage is treated by STWs owned and operated by Anglian Water, but there are a few small privately operated STWs and many septic tanks. Map 10 shows the location of STWs discharges.

Within the area, there are 15 main STWs with dry weather flow, greater than 100 cubic metres per day (m<sup>3</sup>/d). These are all operated by AWS. The sewage effluents treated are predominantly of domestic origin, although some STWs also receive trade wastes.

Chatteris STW has a consented discharge flow of 3,800 m<sup>3</sup>/d, although the current flow is less than this. It discharges to the Nightlayers Drain, which is then pumped into the Forty Foot Drain (Vermuyden's Drain). March STW has a consented flow of 3,500 m<sup>3</sup>/d and discharges to the Twenty Foot River.

Discretionary funding has been allocated to improvements at Somersham STWs. This discharge currently has an unacceptable impact on the water quality in the Cranbrook Drain.

#### **Issue 14: Improvements to Sewage Treatment Works**

Associated with the larger STWs are many sewage pumping stations, most of which have consented emergency overflows. In addition, storm overflows are found on urban combined sewer systems (which combine surface and foul drainage), and at some pumping stations. These discharges are only permitted where damage to installation or property would result without the presence of the overflow.

#### **Issue 15: Adverse Impact of Combined Sewer Overflows in March Town.**

The Old Course of the River Nene in March town centre is seriously affected by discharges of storm sewage and mis-connections of foul drainage into surface water sewers. A scheme to assess and reduce the impact of sewer discharges is planned for completion in the period 1995-2000.

In addition to the improvements in March, a number of other combined sewer overflows have been proposed for remedial work after 2000.

Associated with this intensive arable farming area are many vegetable washing, grading and processing sites. Where possible the recycling of waste-waters is encouraged to minimise the impact on the local water resources. For sites where discharge to watercourse is the only practical option the costs of wastewater treatment can be high.

Pesticide residues are found in vegetable wash-waters, particularly tecnazene and chlorpropham. If present in significant quantities, these agrochemicals may affect water-life. However, recent survey results for this area indicate that these substances are not present at concentrations likely to cause problems. Ongoing assessment of new and existing discharges may in some cases result in the addition of consent limits for these substances.

Map 10 also shows the major industrial discharges within the plan area. The largest discharge is from McCain International, potato processing factory at Whittlesey. The site is consented to discharge 364 m<sup>3</sup>/day of treated trade effluent into King's Dyke via a former brickwork's pit. This discharge is for cooling water from the site, the main trade effluent discharge enters the River Nene.

March Landfill, operated by East Waste has a consent to discharge 230 m<sup>3</sup>/day of site drainage to a tributary of the Twenty Foot River. Leachate from the site is discharged to foul sewer.

#### **Issue 12: March Landfill - Groundwater Protection**

##### **5.8.6 Regulatory Framework**

All discharges of domestic sewage and most industrial effluents are regulated under the Water Resources Act. The EC Urban Waste Water Directive (UWWTD) also sets requirements for the treatment of sewage according to the size of the discharge and the type and sensitivity of the receiving waters. Some industrial processes are covered by the Agency under the EPA90, IPC authorizations. These control processes and releases at sites where the potential for harm to the environment is high. Consents and authorizations are issued which impose conditions on the quantity and quality of the waste-waters to control pollution in the receiving watercourses.

Under the investment programme agreed in 1994 ('Asset Management Plan 2') between the Water Services PLC's (WSPLC's), OFWAT and the NRA, significant investment in sewerage and sewage treatment will be made between 1995 and 2005. Much of this expenditure will focus on achieving compliance with European Directives. However,

**Old Bedford  
Local Environment Agency  
Plan  
Map 10**



ENVIRONMENT AGENCY



0 10km

00  
TL

Peterborough

90

80

20

30

40

50

60

TF  
00  
TL

90

**Sewage and Trade Waste  
Water Discharges**

**KEY**

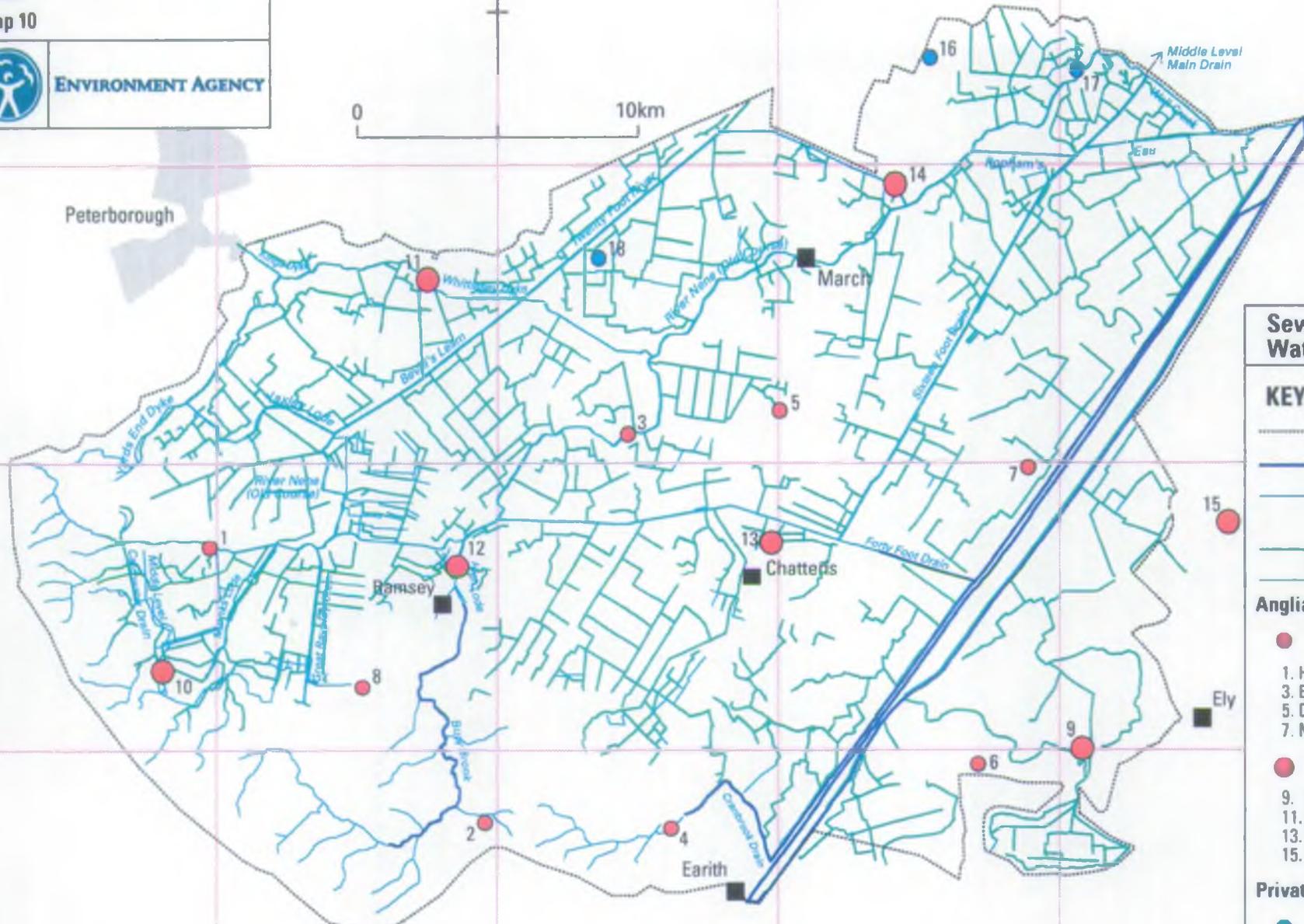
- Area Boundary
- Main River
- Middle Level Commissioners Main Drains
- IDB Watercourse
- Other Watercourse

**Anglian Water Services Discharge:**

- DWF 1000-9999 m<sup>3</sup>/d
  - 1. Holme
  - 2. Oldhurst
  - 3. Benwick
  - 4. Somersham
  - 5. Doddington
  - 6. Witcham
  - 7. Manea Town Lots
  - 8. Upwood
- DWF 100-999 m<sup>3</sup>/d
  - 9. Witchford
  - 10. Sawtry
  - 11. Whittlesey
  - 12. Ramsey
  - 13. Chatteris
  - 14. March
  - 15. Littleport

**Private Discharges:**

- DWF 20-999 m<sup>3</sup>/d
  - 16. Agricultural Camp-Friday Bridge
  - 17. Ward Homes, Upwell
  - 18. Fenland DC, Turves



there is some allowance for discretionary expenditure for additional environmental improvement schemes. The funding available for these improvements is insufficient to carry out all justified improvements. Because of this constraint many WSPLC discharges have consents which are less stringent than necessary to protect the receiving watercourses. These discharges are subject to ongoing review for future water industry investment programmes.

The Environment Act 1995 has placed a new responsibility on water companies to provide ('First Time') public sewerage systems for those villages without such, provided certain criteria are met.

## **5.9 Surface and Groundwater Abstraction**

### **5.9.1 Regulatory Framework**

Water is abstracted from rivers and the ground and used by man in a number of ways, some of which will be outlined below. These competing demands for water are managed by the Agency - it is a finite resource for which the needs of flora and fauna must also be considered.

All abstraction, except for general agricultural and domestic use less than 20m<sup>3</sup>/d taken from surface waters, requires a licence under the Water Resources Act 1991 (previously the Water Resources Act 1963).

An abstraction licence is only issued by the Environment Agency if there is sufficient water available, the need for the water is justified, all rights of existing users are protected and the water environment (eg, rivers, springs and wetland sites) is not unacceptably affected. Abstraction from surface water sources is subject to low level or flow restrictions in order to protect the river and downstream users.

### **AGRICULTURAL ABSTRACTION**

#### **5.9.2 General Perspective**

This use includes water abstracted for general agricultural use (eg, stock watering, mixing chemicals for weed control) as well as overhead spray irrigation.

#### **5.9.3 Local Perspective**

In total, agricultural use of water represents 55 % of licensed abstraction in this LEAP area and hence is the most important use (see Section 5.6 Agriculture). The total volume of water licensed for agricultural use is 7595.45 thousand m<sup>3</sup>/year.

Spray irrigation of mainly vegetable and salad crops accounts for 99% or 7575.23 thousand m<sup>3</sup>/year of the agricultural licensed water and represents 316 out of 329 licences. The water is abstracted, in most cases, directly from low level dykes and drains which are sourced from the Main drains and Rivers such as the River Nene, the Forty Foot River, River Great Ouse via the Old Bedford/Delph, the Tidal Ouse, Well Creek and the Hundred Foot River.

The system of releasing water to meet demand is managed by the IDBs and there is close liaison with the Agency and the MLC. This liaison is especially important during periods of drought as experienced 1990-92 and 1995-96. During these summers, many spray irrigators were restricted to certain hours and times when irrigation could take place in order to manage supply and demand for water. The use of this water for Spray Irrigation is also constrained by chloride concentrations (salinity).

The Agency is responsible for the issue of abstraction licences to the individual abstractors. Water abstracted for spray irrigation is considered as a total loss to water resources. Licences are issued on a time limited basis, normally between 5 and 10 years, so that their impact may be reviewed and licence conditions varied.

Many abstractors are building reservoirs in order to store water during the winter to secure supplies during the summer. The abstraction still requires a licence, however, these are likely to be issued for longer periods normally between 20 and 25 years. When granting licences for abstraction for winter storage reservoirs the reduction in summer abstraction is encouraged.

The remainder of agricultural abstraction licences are for livestock watering and other general agricultural needs. Most watercourses in the plan area are used or have the potential to be used for livestock watering.

## **INDUSTRIAL ABSTRACTION**

### **5.9.4 General Perspective**

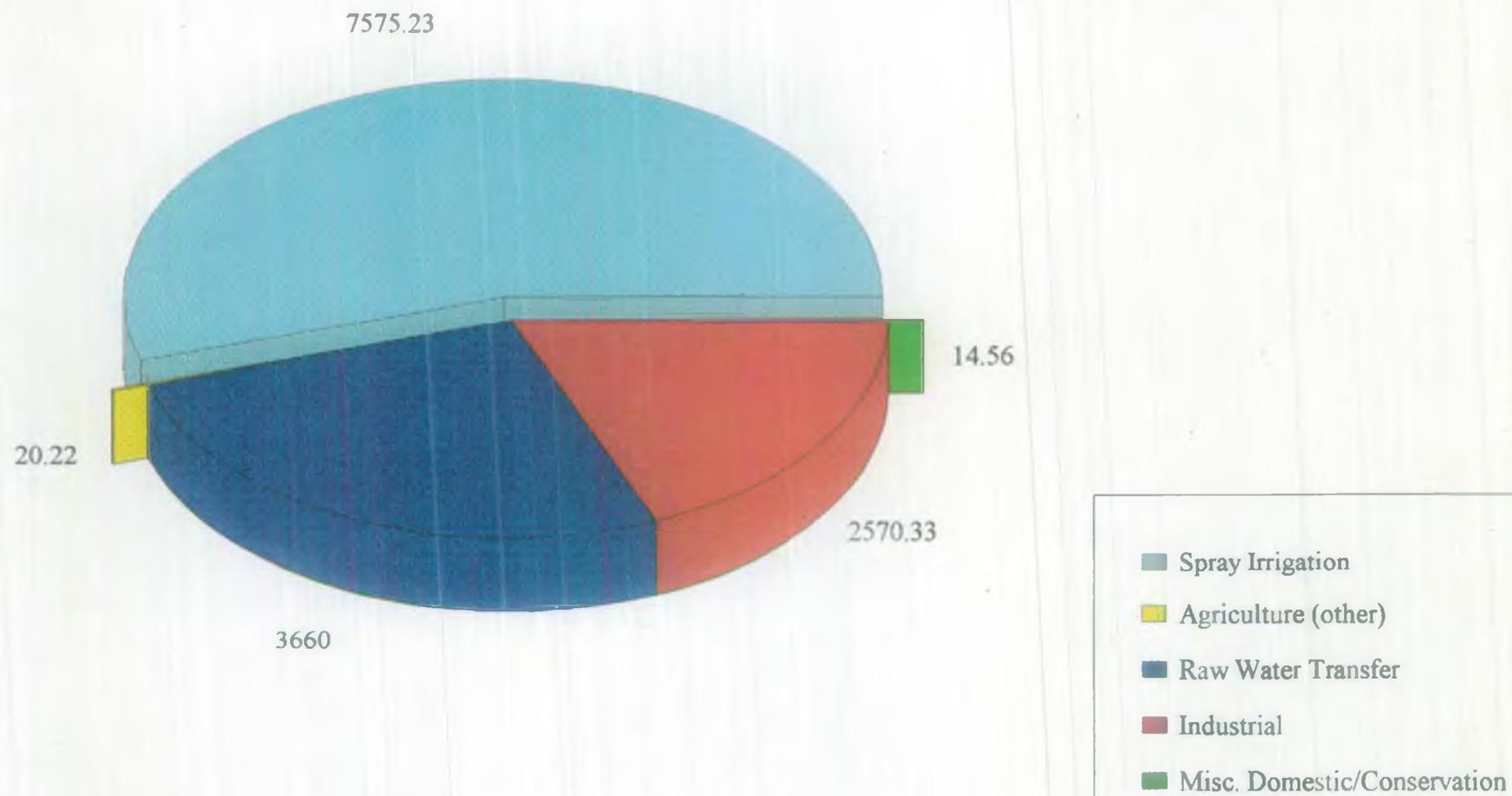
This use describes the abstraction of water from ground and surface waters for industrial purposes. Industrial abstractions include water used for industrial processing, cooling, vegetable washing and sand and gravel washing.

### **5.9.5 Local Perspective**

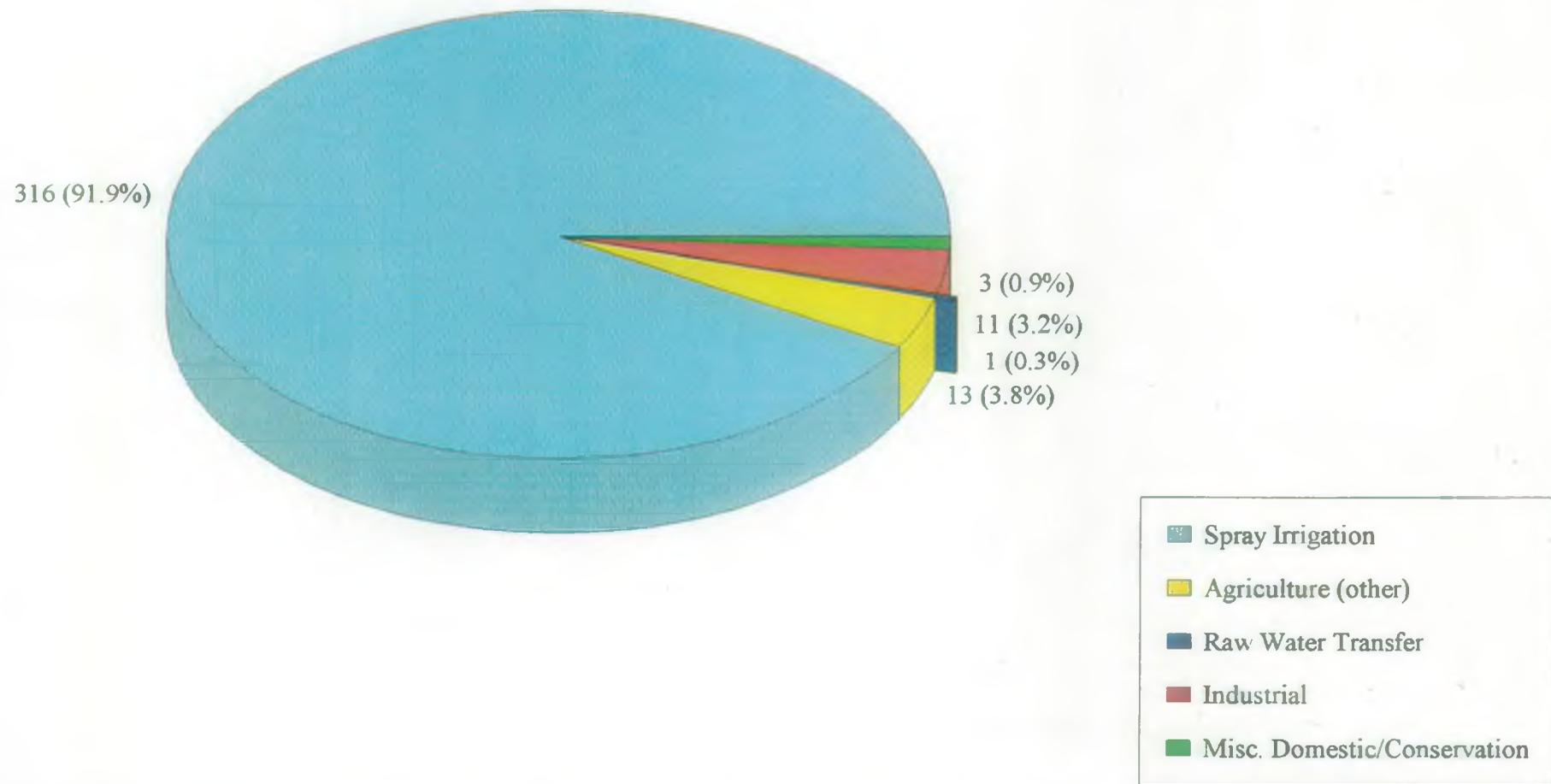
There are 11 abstraction licences, classified as industrial use in this area. Most, 7, are for vegetable washing and/or food processing which reflects the agricultural aspect of this LEAP area. The remaining 4 consist of concrete manufacture, brick manufacture and

**Figure 4. Volume of Water Licensed (thousand cubic metres per annum)**

Old Bedford Area



**Figure 5. Number of Licences Issued**  
Old Bedford Area



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sand and gravel washing plants. In terms of water quantity, the total industrial use is 2570.33 thousand m<sup>3</sup>/year of which vegetable washing accounts for 430.3 thousand m<sup>3</sup> and sand and gravel washing represents 1477.3 thousand m<sup>3</sup> (see Section 5.3 Industry).

#### POTABLE WATER SUPPLY

##### 5.9.6 General Perspective

This use relates to the abstraction of surface water (ie, rivers and springs) and groundwater for domestic or industrial potable use.

Private individuals using water for their own individual domestic use are not required to have an abstraction licence unless the quantity used exceeds 20m<sup>3</sup>/d.

##### 5.9.7 Local Perspective

Cambridge Water Company and AWS are responsible for supplying mains water to customers in this LEAP area. All the water is imported from borehole and river sources *outside* of this area.

Individual householders may abstract from springs for their own domestic use.

#### RAW WATER TRANSFER

##### 5.9.8 General Perspective

The Agency has a responsibility to conserve, redistribute and protect water resources and it therefore undertakes raw water transfers to redistribute water from areas of surplus to areas of local deficit. There are raw water transfers between catchments and also within the same catchment. Where possible the schemes use existing watercourses to redistribute the water.

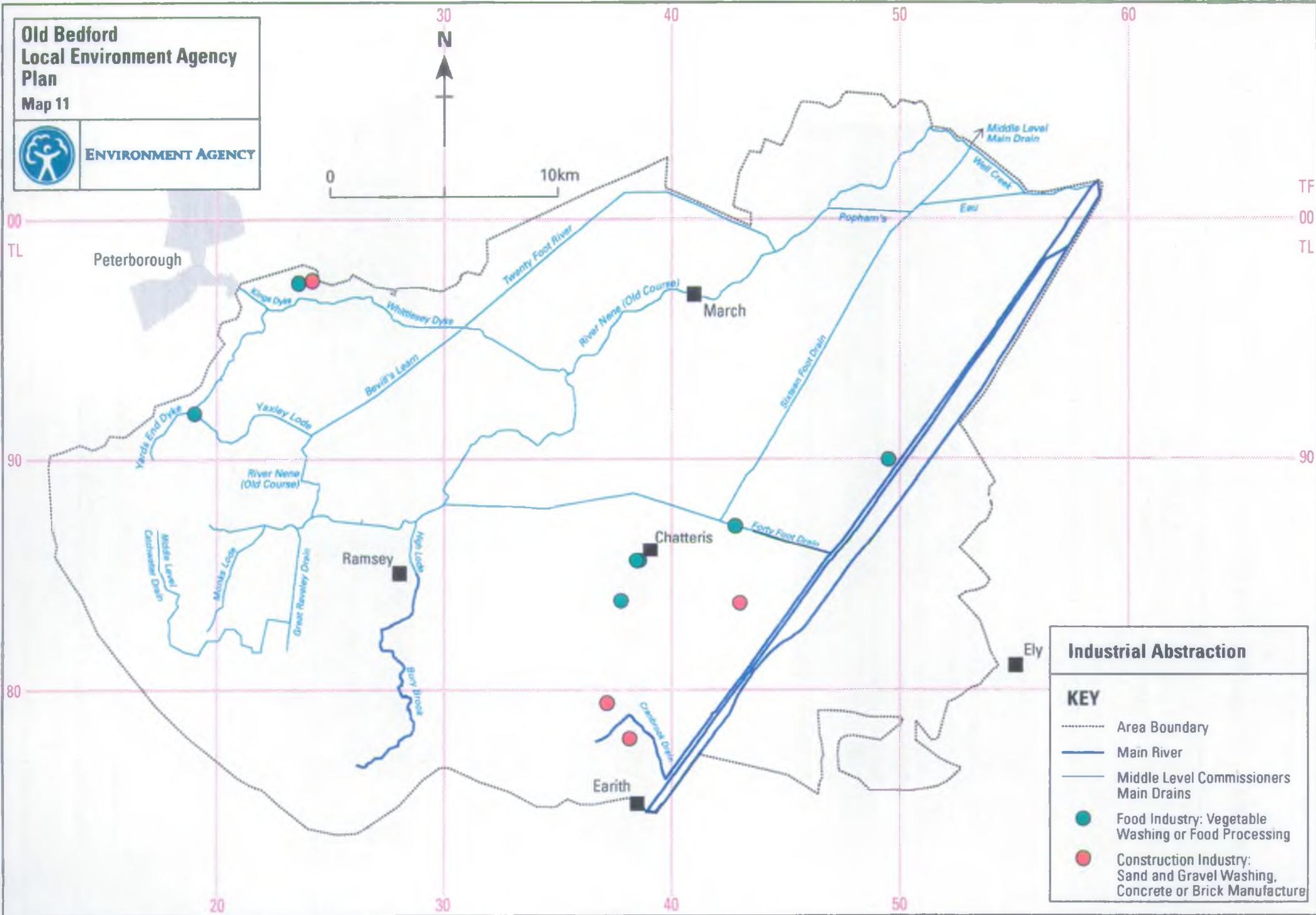
##### 5.9.9 Local Perspective

The Agency holds a licence which allows the transfer of water from the River Great Ouse (at Earith Sluice, TL389 748) into the Old Bedford/Delph. This can then be re-abstracted near to Welches Dam (TL470 858) and transferred into the Forty Foot Drain. The purpose of such a movement of water is to supplement the water resource in the Middle Level Drainage Area to meet summer demands, mostly for spray irrigation. Due to navigation constraints which require Earith levels to be maintained above 2.13m AOD, the transfer rarely takes place.

**Old Bedford  
Local Environment Agency  
Plan  
Map 11**



ENVIRONMENT AGENCY



**Industrial Abstraction**

**KEY**

- Area Boundary
- Main River
- Middle Level Commissioners Main Drains
- Food Industry: Vegetable Washing or Food Processing
- Construction Industry: Sand and Gravel Washing, Concrete or Brick Manufacture



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The licence allows up to 600,000 m<sup>3</sup>/30 days or 3,660,000 m<sup>3</sup> between 1st April to 30th September to be transferred. However, there is a clause which restricts the abstraction from the River Great Ouse to periods when the water level at Earith Sluice is greater than 2.13 m (7 feet) AOD which has been set to protect navigation activity in the River Great Ouse. This clause often prevents the transfer taking place when the water is needed.

The MLC have powers under the 1848 Middle Level Act to take water from the River Nene at Stanground for the purpose of maintaining a depth of water in specified sections of the Middle Level section. An abstraction licence is not required and the volume of water is restricted to 136,000 m<sup>3</sup>/d by the structure of the lock. During drought conditions, the full quantity may not be available to transfer. As the supply reduces, following discussions with the MLC, the Agency is able to restrict the demand of spray irrigation by enforcing cessation clauses in the licences.

During the summer, the Old Bedford/Counterdrain can receive water from the Tidal River through the Old Bedford Lock near Salters Lode. The transfer can only take place at high tide provided the salinity is below an agreed threshold at the Salters Lode automatic monitor.

Many other raw water transfers occur via slackers, which are valve-controlled syphons between the river and drain, and these are operated by the IDBs.

## **5.10 Flood Storage, Flood Defence and Land Drainage**

### **5.10.1 General Perspective**

The main requirement is for the provision of effective defence for people and property against flooding from rivers. Normally flooding is a result of climatic conditions, principally heavy rainfall. Flood events are described in terms of frequency at which, on average, a certain severity of flood is exceeded. This frequency is usually expressed as a return period in years, eg, 1 in 50 years.

The most important Environment Agency activity within this plan area is the management, maintenance and provision of Flood Defence and Flood Storage. Within the flood defence system of the Ouse Washes certain channels are designated as Main River. The Environment Agency has control over the construction of any structure in or close to the statutory Main Rivers and is responsible for their maintenance and control.

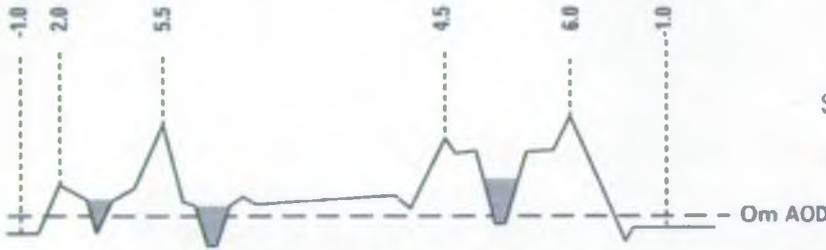
The Agency has a flood defence operational maintenance team which deals with emergencies together with 'permissive powers' to carry out river maintenance, which ensures that drainage systems function as required.

Old Bedford  
Local Environment Agency  
Plan  
Map 12

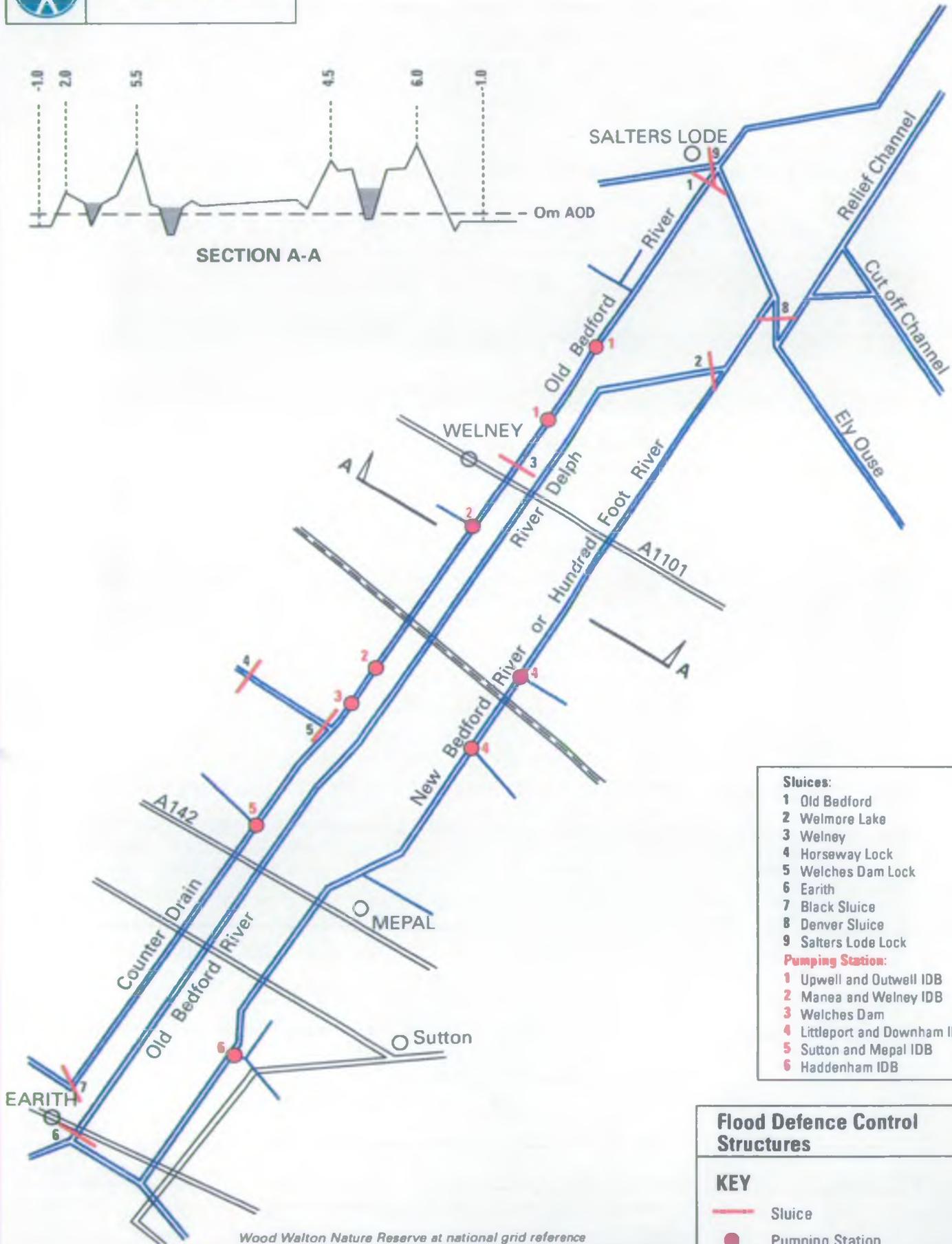
NOT TO SCALE



ENVIRONMENT AGENCY



SECTION A-A



- Sluices:**
- 1 Old Bedford
  - 2 Welmore Lake
  - 3 Welney
  - 4 Horseway Lock
  - 5 Welches Dam Lock
  - 6 Earith
  - 7 Black Sluice
  - 8 Denver Sluice
  - 9 Salters Lode Lock
- Pumping Station:**
- 1 Upwell and Outwell IDB
  - 2 Manea and Welney IDB
  - 3 Welches Dam
  - 4 Littleport and Downham IDB
  - 5 Sutton and Mepal IDB
  - 6 Haddenham IDB

**Flood Defence Control Structures**

**KEY**

- Sluice
- Pumping Station

Wood Walton Nature Reserve at national grid reference TL 230 845 is used by the Agency as a flood storage area (See Map X).

In addition to the Ouse Washes, the Agency carries out maintenance work on the Old Bedford/Counterdrain and Bury Brook. Outside of these catchments, maintenance work is undertaken to a consistent standard, by the MLC or the respective IDBs.

### **5.10.2 Local Perspective**

#### ***Statutory main river and control structures***

The Ouse Washes river system comprises four main rivers, and an internal ditch system with control structures (see Map 12). Each river has different characteristics and is detailed as follows:

#### **(i) *Hundred Foot River/New Bedford River***

Under normal conditions water from the Bedford Ouse flows down the Hundred Foot River and is discharged to the sea via the Tidal River. Levels in the Hundred Foot River are affected by Bedford Ouse fluvial flow and King's Lynn tidal levels. There are no control sluices on the Bedford Ouse, Hundred Foot River or Tidal River between Brownhill Staunch and the sea at King's Lynn. However, water levels are affected by the operation of Earith Sluice and Denver Sluice.

The Hundred Foot River and Bedford Ouse receive local drainage water from five IDB pump stations. Most of these IDBs also abstract water in summer by gravity through slackers. The Environment Agency manage a small gravity transfer from the Hundred Foot River into the Old West River, through Hermitage Lock, to maintain water quality.

#### **(ii) *Old Bedford/Delph***

During flood conditions, when water levels in the Bedford Ouse upstream of Earith rise beyond a predetermined level, Earith Sluice opens automatically and discharges water into the Old Bedford/Delph. The level at which Earith Sluice starts to open is 3.17 m AOD between November and March, and 3.77m AOD between April and October. These levels are governed by regulations laid down in 1931 under the 1930 Land Drainage Act. The Earith drawmark may need to be reviewed in the near future as part of the Denver Operational Review.

#### **Issue 4: Limit Summer Flooding to Ouse Washes**

As levels in the Old Bedford/Delph rise, water flows over its right bank onto the Ouse Washes. The lowest Washes start to flood at about 0.7 m AOD and by

1.7m AOD most of the Ouse Washes are flooded. Therefore the Ouse Washes can be considered a large raised reservoir. Levels above 2.35 m AOD flood the Welney Road, causing significant disruption to local traffic.

Floodwater flows northwards along the Ouse Washes and is discharged through the tidal flap at Welmore Lake Sluice when levels in the Old Bedford/Delph exceed those in the Hundred Foot River. As levels in the Old Bedford/Delph drop water drains off the Ouse Washes, initially on a broad front, and then through the internal ditch system. In spring it is often difficult to discharge water through Welmore Lake Sluice at levels below 1.3 m AOD, and temporary pumps are then used to remove the remaining flood water and attain the desired summer level of 0.5 m AOD.

### **Issue 3: Draining the Ouse Washes After Winter Floods**

#### **(iii) *Cranbrook, Old Bedford/Counterdrain***

The Old Bedford/Counterdrain catchment is distinct from the rest of the Ouse Washes. The upper part of the watercourse, known as the Cranbrook Drain, receives surface water run-off from the villages of Somersham and Colne. The lower part of the watercourse receives drainage water from IDBs, via six pumping stations, the locations of which are shown on Map 12. Under normal conditions water from the Old Bedford/Counterdrain is discharged through the Old Bedford Lock, near Salters Lode. The Old Bedford/Counterdrain is connected to the Forty Foot River via Welches Dam Lock.

When water levels in the Old Bedford/Counterdrain at Welches Dam exceed 1.15m AOD, pumps at Welches Dam Pumping Station discharge water into the Old Bedford/Delph. Before pumping can commence the Welney Gate must be closed, so that the pumps only deal with water entering south of the gate.

### **Issue 2: Maintain Flood Defence Capacity**

Below Welney Gate, excess water is either discharged through Salters Lode, or if this is tide-locked, flows over a weir near Salters Lode into the Middle Level drainage system, finally being discharged through the MLC pumps at St Germans.

The summer target level of the Old Bedford/Counterdrain has historically been 0.91 m AOD, although this has been difficult to achieve in many years, because of limited water resources and problems retaining water in the river. If it is not

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possible to transfer water through Old Bedford Lock because of high salinity levels in the Tidal River, levels in the Old Bedford/Counterdrain can drop by up to 8 cm per day, as a result of seepage and evaporation. During summer the Old Bedford/Counterdrain is the only source of external irrigation water for Sutton and Mepal IDB and Manea and Welney drainage district, although other sources within the districts could be developed, for example winter storage reservoirs. Water is also taken by Upwell IDB through the Old Croft slacker to maintain levels in the Old Croft River, which runs through Welney village. In 1995 water levels dropped to below 0.5 m AOD, despite cessation of abstraction when levels reached approximately 0.75 m AOD. It appears that, during a dry summer, significant quantities of water are lost from the Old Bedford/Counterdrain through seepage and evaporation.

(iv) *Ouse Washes internal ditches and control structures*

There are approximately 140 km of ditches within the Ouse Washes. The main functions of the internal ditches are; to act as wet fences, to provide drinking water for cattle and to maintain high summer water tables. However, the ditches also have an important role to play in the drainage of floodwater.

During summer, ditch water levels drop through evaporation and seepage, and the ditches have to be replenished using water from the Hundred Foot River. This water enters the Ouse Washes through seventeen slackers in the Cradge Bank. Because of the tidal nature of the Hundred Foot River, water can only be obtained on seven days out of fourteen.

Water from the slackers enters the Cradge Ditch, and is then directed into the internal ditches using a variety of water control structures. The ditches are filled to approximately field level. The majority of the internal ditches have polypropylene pipes at their bottom ends, which are positioned so as to prevent excess water flowing from the ditches into the Old Bedford/Delph during summer. However, levels in the Old Bedford/Delph have been observed to rise with the tidal cycle. The source of the water affecting levels has not been identified.

(v) *Middle Level System*

The MLC are responsible for the maintenance of the Middle Level Drainage System. A major improvement scheme to the drainage system was carried out between 1977 and 1983 in order to resolve the problems of the south west area, as this is remote from St Germans Pumping station and land levels in the area are the lowest in the catchment and coincide with the maximum depths of remaining

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surface peat. A booster pumping station has been constructed at Tebbitts Bridge on Bevills Leam, and the capacity of the station has been geared to that of the downstream drainage by regulating flows from the highland brooks which enter this part of the system from the low clay hills in the west of the plan area.

Water levels can now be lowered over the years as necessary within the boosted area without disturbance of the downstream system. The problem of increasing run-off has been eliminated and a long term solution to the problem of peat shrinkage in the south west area provided.

Regulation of the highland run-off is being achieved by diverting the highland brooks to Raveley Drain by means of a new catchwater channel and by utilising Woodwalton Fen National Nature Reserve as a flood storage area. A control sluice has been constructed on Great Raveley Drain and impounding embankments have been built to contain the water which flows into the reserve when the control sluice is brought into operation.

The impounding works facilitate the storage of 1.8 million m<sup>3</sup> of water on the Nature Reserve (200 ha.) when flooded to a maximum depth of 0.9 metre. This will allow reduction of flow at the control sluice to 6.7 m<sup>3</sup>/s under maximum design conditions, which is less than 1/5th of the maximum designed flow from the high-land catchment.

The scheme will benefit the Nature Reserve by maintaining a high water table there in the future, and clay for the impounding embankments was obtained by excavating two meres in the Reserve. The scheme has therefore been of mutual benefit to nature conservation and land drainage, and has been carried out with the approval and co-operation of EN and Royal Society for Nature Conservation.

In the remainder of the system, low banks on the Old River Nene were raised and clay-puddled where necessary to reduce seepage in the early stages of the works, and major improvements to the Middle Level Main Drain, Sixteen Foot and Forty Foot Rivers have been carried out to maintain acceptable water levels.

### **5.10.3 Regulatory Framework**

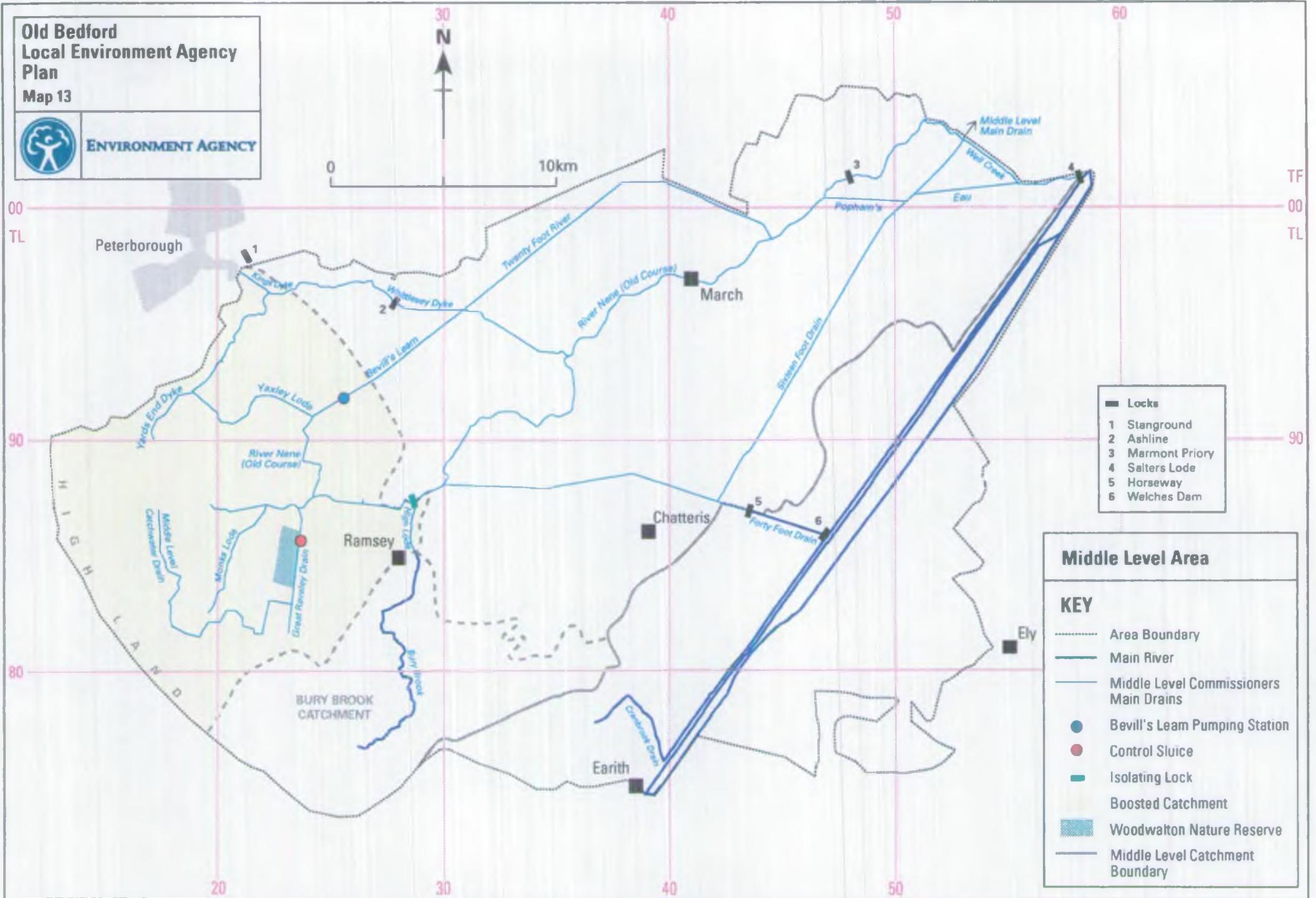
#### ***Main River***

All watercourses are classified as either 'main river' or ordinary watercourses. Main river includes all watercourses which contribute significantly to a catchment's drainage although locally ordinary watercourse may be more significant. The legislation dealing with main river is the Water Resources Act 1991 and is supplemented by local byelaws.

Old Bedford  
Local Environment Agency  
Plan  
Map 13



ENVIRONMENT AGENCY



- Locks
- 1 Stanground
- 2 Ashline
- 3 Marmont Priory
- 4 Salters Lode
- 5 Horseyway
- 6 Welches Dam

**Middle Level Area**

**KEY**

- Area Boundary
- Main River
- Middle Level Commissioners Main Drains
- Bevil's Leam Pumping Station
- Control Sluice
- Isolating Lock
- Boosted Catchment
- Woodwalton Nature Reserve
- Middle Level Catchment Boundary

The Agency supervises all flood defence matters but have special powers to carry out or control work on main rivers.

Local authorities and in some areas IDBs are responsible for flood defence on ordinary watercourses. The legislation relating to ordinary watercourses is the Land Drainage Act 1991. The overall responsibility for flood defence in England rests with MAFF and the Ministry fulfils this by:

- (I) Establishing a policy framework for the responsible organisations such as the Environment Agency to provide flood warnings and carry out defence, drainage and maintenance works.
- (ii) Provision of government grant for cost-effective flood defence works and flood warning systems.

The 'Old Bedford' plan area contains the Middle Level drainage system and several Internal Drainage Districts, the boards of which are responsible for administering and carrying out maintenance and flood protection duties.

#### ***Land Drainage Consents***

Land Drainage Consent is required for works on or near the bank of a main river. This includes construction in, over, under or within 9m of the watercourse or landward toe of a raised bank including such activities as the planting of trees and mineral extraction. On ordinary watercourses consent is only required for any works that would affect the flow. This is to protect people both upstream and downstream from the risk of increased flooding. The byelaw distance of 9 m also assists the Agency with preserving an access, wherever possible, for staff and equipment carrying out flood defence activities. In deciding whether to issue a consent account is taken whether the proposed works conserve and enhance the environment.

Because the Ouse Washes are designated a SSSI and also recognised as a Special Protection Area (SPA) and Ramsar site, any works require the consent of EN - although a blanket consent is given for regular flood defence maintenance works.

#### ***Reservoirs Act Supervision***

From April 1997, the Agency will become the enforcement Authority for all reservoirs holding over 25,000 m<sup>3</sup> above the lowest adjacent ground level. There is a duty to supervise reservoir inspection by a qualified engineer twice each year to ensure they are in a safe condition.

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***Routine Maintenance Activities***

Regular maintenance of watercourses, structures and pumping stations is essential if the river system is to operate effectively in times of high water levels. Such maintenance works include dredging, weed control, bank maintenance, obstruction removal, vermin control, structures operation, mechanical and electrical maintenance of structures and pumping stations.

The annual programme takes account of conservation recommendations and special features are protected and the most appropriate working methods adopted to enhance river habitats, whilst maintaining flood defence objectives.

<b>Issue 7: Control Weed Growth in the Old Bedford/Counterdrain</b>
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In this plan area, an annual allocation in the region of £230,000 is made for the Agency's routine maintenance works.

***Emergency Response***

At times of high water levels in addition to the Agency's flood warning role, the defences are patrolled, structures are checked for blockages, pumping stations are operated and any emergency repairs carried out. Assistance may also be offered during floods by County Councils, District Councils and Fire Service.

***Capital Works***

In addition to general maintenance work major improvements to flood defences and structures are also constructed. All schemes must be technically, economically and environmentally sound. A programme of Capital Works helps the Agency to plan for the future.

There are two major schemes in the programme for the Ouse Washes:

- (i) Reconstruction of Welmore Lake Sluice. This will increase the discharge capacity of flood water from the Ouse Washes, and also decrease the duration of summer flooding.
- (ii) Improvements to the Old Bedford/Counterdrain system including the automation of Welches Dam Pumping Station, anti-seepage works to the Cranbrook Drain and a possible new pumping station at Black Sluice are currently under consideration. However, a large proportion of the cost will be paid for by Sutton & Mepal and Manea & Welney IDBs and their responses will influence the final

chosen option.

### ***Local Flood Defence Committee (LFDC)***

Executive control of the Flood Defence function's finances and work programmes is vested in the Great Ouse LFDC whose membership includes County Councils. The committee draws its statutory powers from the Water Resources and Land Drainage Acts (1991), which enables it to place levies on local County Councils, IDBs and the public through a general drainage charge. The LFDC presently oversees the expenditure of approximately £10 million each year, a third of which is drawn from MAFF by grants towards the costs of capital projects.

## **5.11 Recreation and Amenity**

The Agency's recreational duties are to promote the use of inland and coastal waters and to take account of recreation opportunities whilst undertaking all functions. Activities such as Angling and boating are covered under specific legislation. The Agency should, in addition, seek to preserve and maintain public access to places of natural beauty or sites of historic interest.

Although the Agency is able to make land in its ownership available for recreational purposes, it has limited powers with respect to privately owned waterside land. Collaborative input is limited to advice in order to maximise the recreational potential of appropriate areas.

### **TOURISM**

#### **5.11.1 General Perspective**

Nationally, leisure, recreation and tourism are growth areas, and can make a significant contribution to the local economy. Increasing demands for these activities are placing newer and greater pressures on the environment, in both historic towns and the countryside.

It is clear that there are distinct advantages to be obtained from the tourist industry; more jobs, increased income generation, and the provision of facilities which can be used by local people. However there are inevitable disadvantages - for example, jobs in the industry tend to be seasonal and low paid, it can cause damage to the environment, increase congestion and adversely affect community life. Therefore, a balance needs to be reached between these advantages and disadvantages and this can be best achieved by Local Plan policies drawn up in collaboration with environmental and other interest

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parties.

### **5.11.2 Local Perspective**

There are many opportunities within the 'Old Bedford' area to increase the range of tourist facilities and to improve access to them generally. In the countryside, particularly opportunities for diversification and the use of land released from agriculture present new challenges to the planning system. All the LPAs in the area recognize the significance of the tourist industry and are striving to improve tourist opportunities, access to the countryside and enjoyment of the natural environment, including waterways.

#### ***The Fens Tourism Group***

The Fens Tourism Group, which is a partnership between various district councils, county councils and tourism boards, was set up with the aim of strengthening the identity and character of the Fens and encouraging more visitors to the area.

This group recognises that the Fens area, which forms a substantial part of the 'Old Bedford' area, is not a conventional tourist destination. Promotional activity and media attention helps to counteract the 'flat and black' stereotype image of the district and public perception of the Fens is gradually changing, however much of the character and interest of the area is hidden from the casual observer and there is a need to unlock the 'Fenland Experience' for the visitor.

In 1990 funding was provided for a Consultant's study into the feasibility of developing the tourism potential of the Fens. It highlighted the fact that there is little information available to the visitor to interpret the landscape and few physical remnants of the gargantuan engineering task that created it. The setting up of an 'Interpretation Centre' to address these needs remains a long-term objective for the members of the Fens Tourism Group, when funding becomes available.

As part of the modernisation to the main bird hide at Welney Reserve, the Agency financed an interpretation 'centre'. These boards provide information on the history of the Fens and local opportunities for visitors.

#### ***Other Initiatives***

The lack of quality touring caravan and camping sites has been identified and as demand for this type of facility is likely to increase, they will need to be developed alongside other tourism-related activities to be viable.

Other local tourist initiatives are being fostered including encouraging local people to offer bed and breakfast or other accommodation, the support of proposals to develop tourist facilities on farms, such as the conversion of redundant farm buildings to accommodate activities outside agriculture, eg, tourist accommodation. This is in response to the Government's Set Aside and Farm Diversification Grant Scheme, in order to promote public enjoyment of the countryside.

Cambridgeshire County Council, together with the District Councils and the Rural Development Commission have recently instigated a Fenland Countryside Project which seeks to involve the local communities in the identification of routes for walking, cycling and horse riding.

#### ANGLING

##### **5.11.3 General Perspective**

It is the statutory duty of the Environment Agency to regulate fishing through the sale of a national rod licence. Once the appropriate licence has been purchased the angler may fish with rod and line anywhere in England and Wales, subject to permission from the owner or club with the fishing rights. Certain local byelaws will apply including permitted methods and baits and the use of keepnets. The income generated from rod licence sales finances enforcement, fishery monitoring, fish rearing and stocking, habitat improvement, fish rescues, R&D and advice.

##### **5.11.4 Local Perspective**

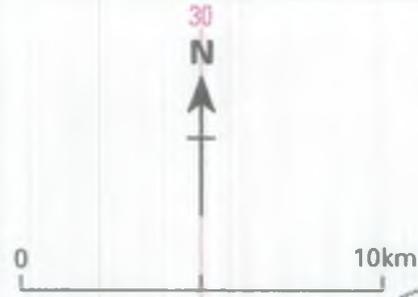
The majority of the rivers and drains within the area are actively fished. The Middle Level System has been a popular coarse fishing venue over many decades, with all the major water courses let to angling clubs. In addition, we lease the Old Bedford/Counterdrain, the Old Bedford/Delph and the Hundred Foot River to clubs where the angler's needs must be carefully balanced with the other users of the Ouse Washes. All rivers and drains are subject to the annual close season.

There are about 12 angling clubs within the Middle Level, clubs with the longest stretches of bank are Whittlesey AA on the Twenty Foot, March and District AA on the Sixteen Foot and Chatteris Working Men's Club Institute on the Forty Foot. Free Fishing is available on the Well Creek at its downstream end and a small section of the Old Nene at March through Fenland District Council. There are a number of match fishing venues in the Middle Level and some waters regularly attract up to 100 anglers for a weekend match, notably the national pike championships which are annually held on the Forty Foot and Sixteen Foot Drains.

**Old Bedford  
Local Environment Agency  
Plan  
Map 14a**



ENVIRONMENT AGENCY



**Angling Clubs**

**KEY**

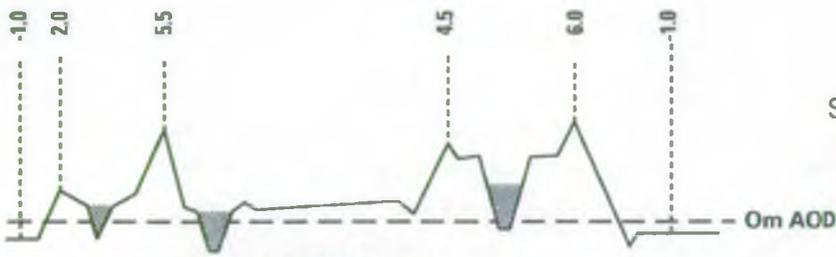
- Area Boundary
- Main River
- Middle Level Commissioners Main Drains
- Ramsey & District AS
- Benwick AC
- March & District AA
- Sutton & District AA
- Free Fishing (Fenland DC)
- Whittesey AA
- Yaxley Holme & District AA
- Chatteris Working Mens Club & Institute
- Free Fishing (The Well Creek Trust)
- Peterborough & District AA
- Kings Lynn AA
- Manea AC

**Old Bedford  
Local Environment Agency  
Plan  
Map 14b**

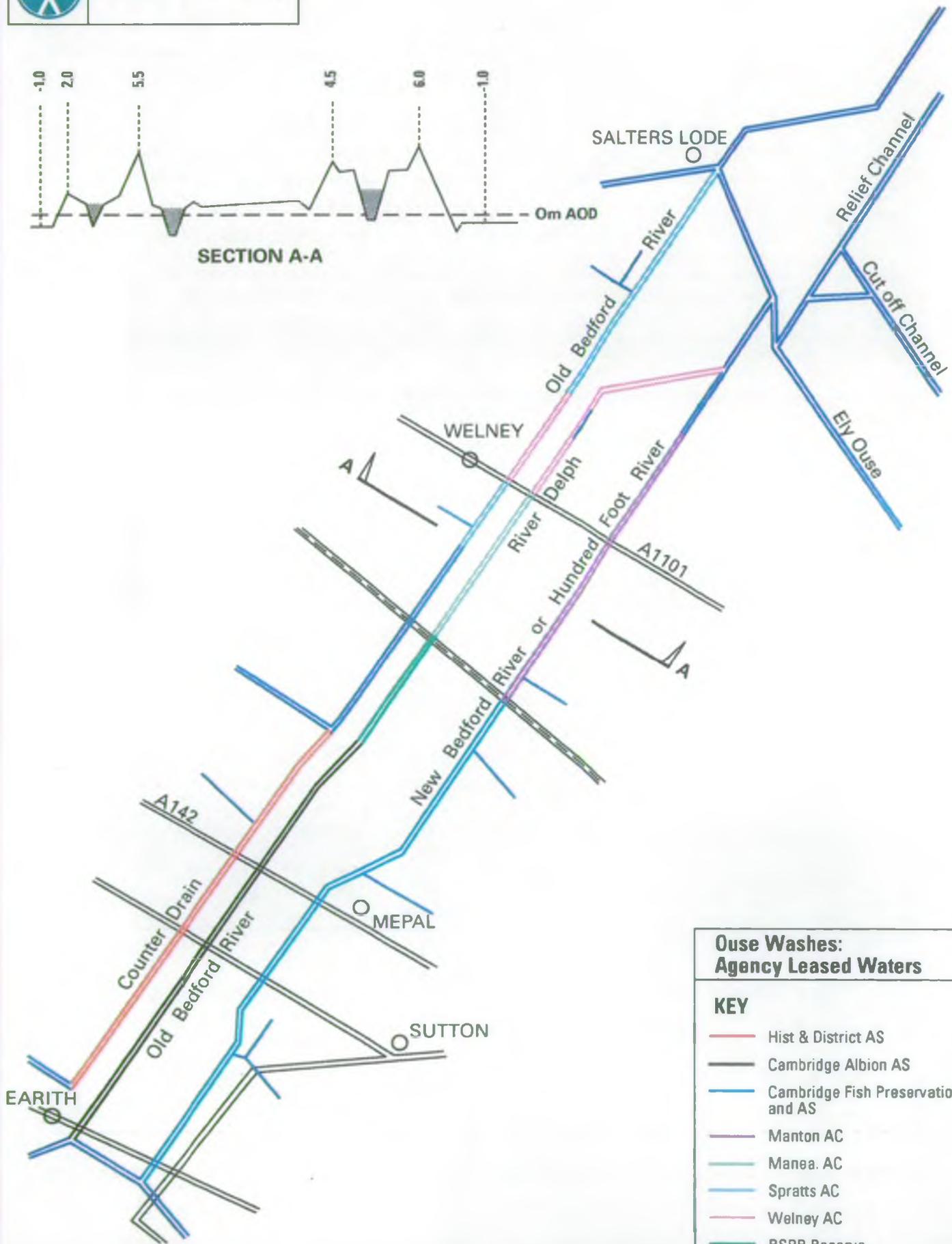
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ENVIRONMENT AGENCY



SECTION A-A



**Ouse Washes:  
Agency Leased Waters**

**KEY**

- Hist & District AS
- Cambridge Albion AS
- Cambridge Fish Preservation and AS
- Manton AC
- Manea. AC
- Spratts AC
- Welney AC
- RSPB Reserve

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The number of pleasure anglers is difficult to quantify because of the large plan area, however, it is thought numbers are relatively few. A decline has been noted in the popularity of the system since its heyday in the 1970s when many anglers travelled from the Midlands and Yorkshire to fish the system.

Nearly all the bank lengths on the Old Bedford/Counterdrain and the Old Bedford/Delph are available for fishing, the exceptions are areas near the bird reserves. There are six clubs in total which lease stretches, the longest sections are to Histon and District AC on the Old Bedford/Counterdrain and to Cambridge Albion AS on the Delph. The Hundred Foot River Tidal River is leased to Cambridge Fish Preservation AS and Manton AC.

Match angling on the Washes tends to take place on Saturdays and Sundays whilst leisure anglers are seen throughout the week. The RSPB has negotiated with the clubs that they stop fishing at the important overwintering sites for wildfowl by the end of October. The parts of the rivers most intensively fished show a strong correlation to access points. The Agency has addressed this problem at Mepal, where a car park for 40 cars has been created; adjacent to the angling club lake, Pingles Pit, which is leased to Cambridge Albion. The Agency has also constructed an access bridge over the Old Bedford/Counterdrain to allow anglers to fish the Old Bedford/Delph.

The number of stillwaters in the plan area is relatively small. There are coarse fishery complexes at Mepal and Earith that have developed from gravel pits. Individual stillwater fisheries are located near watercourses across the area, for example, to the south of the Twenty Foot River and to the west of the Old Bedford River. The largest lake at Holme Fen Drove is a day ticket trout fishery, whilst game fishing is also organised at one of the other Earith pits

#### **5.11.5 Regulatory Framework**

The principle piece of legislation that protects fish stocks and also controls commercial and recreational fishing is the Salmon and Freshwater Fisheries Act 1975. The Agency consents any introduction of fish into inland waters. Applications must also be made to remove fish.

#### **NAVIGATION**

#### **5.11.6 General Perspective**

The rivers and drains within this area provide boaters with an extensive network of navigable waterways.

The Anglian Region Navigation Customer Survey (1992) is a key document that

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furthered our understanding of boaters needs and attitudes. In addition, the (Sports Council) Zone 1 report of the Water Recreation Strategy makes certain recommendations specific to navigation which are fully endorsed by the Agency.

#### **5.11.7 Local Perspective**

The Middle Level System provides a link between the navigable River Nene, access is gained via the lock at Stanground, and for the navigable Great Ouse through Salters Lode lock. Of the 187km of main channels, about 150km are navigable. The system is managed by the MLC and at present no toll charges are incurred by users. Channel maintenance costs are met through drainage rates and fisheries leases. Financial support from other groups has helped with the construction of new landing stages and winding gear at locks.

Many of the objectives in the 1986 Nene-Ouse Navigation Link Plan have been met, particularly the improved facilities for boaters at both Whittlesey and March.

A statutory right of navigation exists along the Old Bedford/Counterdrain from Welches Dam to its exit at Salters Lode. Access to the Old Bedford/Counterdrain from the tidal river via the Old Bedford sluice can only be negotiated at a certain tidal height. Increasing siltation on the downstream side of these lock gates has severely hindered access, recently.

An alternative route for entry into the Old Bedford/Counterdrain is available via the Forty Foot Drain (Horseway Lock) and Welches Dam. At present the Agency attempts to ensure access is available on alternate summer weekends and bank holidays if the drought conditions allow. The utilisation of this link is minimal; the maximum usage, 20 boats in the season, was immediately after opening in 1991. The boating usage of this watercourse is considered to be very small. The future use of the Old Bedford/Counterdrain as a navigable water needs to be reviewed as a matter of urgency.

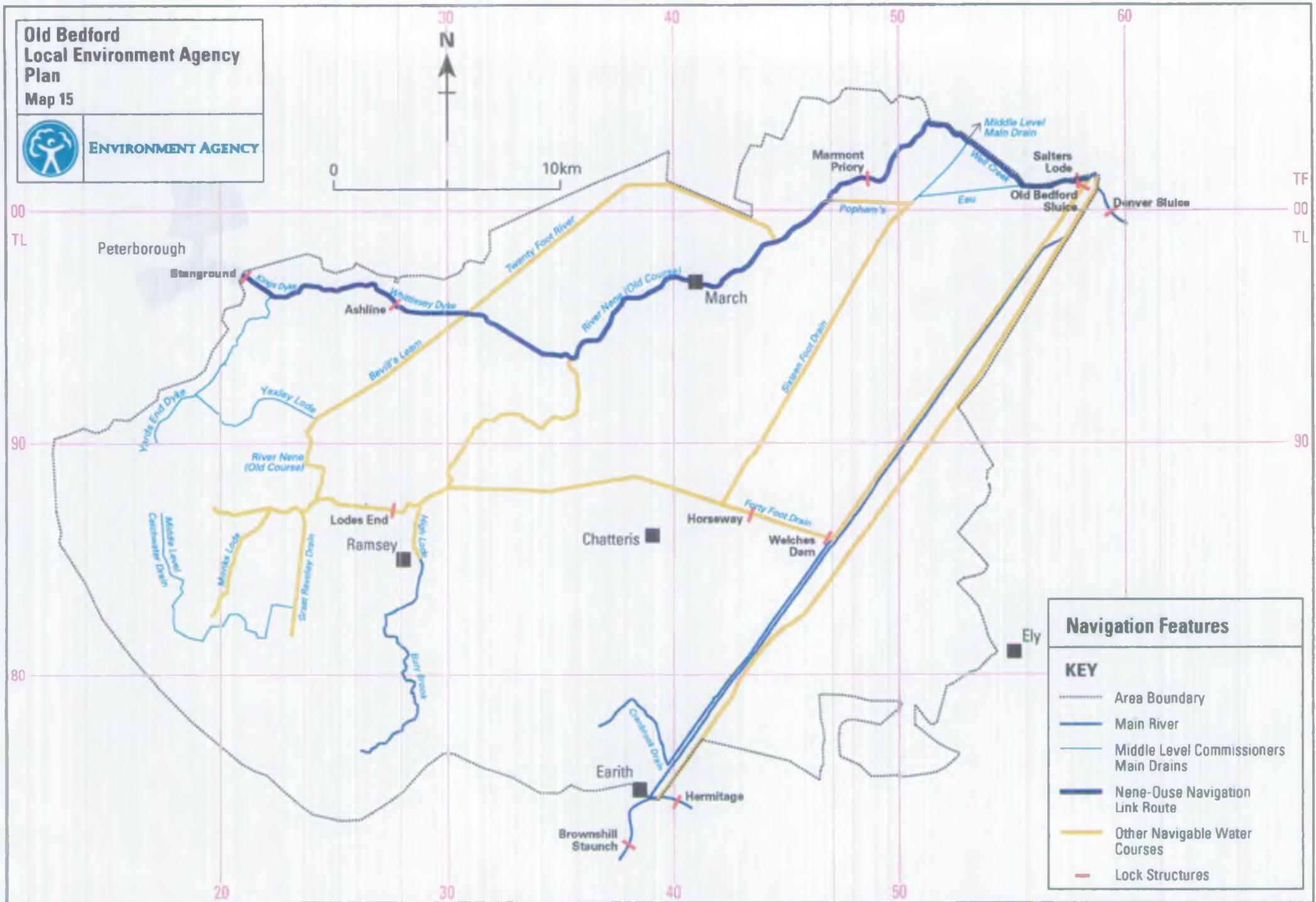
<b>Issue 19: Review of Old Bedford Navigation</b>
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The Hundred Foot River between Denver and Earith is part of the Great Ouse Navigation, the major boating network in the Region. It is navigable between Bedford and the tidal limit. Boating on the stretch is influenced greatly by the tidal fluvial water. During dry weather and low tide the minimum depth of around 0.3 m would severely hinder most boaters.

**Old Bedford  
Local Environment Agency  
Plan  
Map 15**



ENVIRONMENT AGENCY



**Navigation Features**

**KEY**

- Area Boundary
- Main River
- Middle Level Commissioners Main Drains
- Nene-Ouse Navigation Link Route
- Other Navigable Water Courses
- Lock Structures

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**Issue 20: Siltation in the Hundred Foot River**

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The Denver complex is extensively used by boaters. Recent improvement works have resulted in additional moorings for a further 16 boats and re-instatement of bank revetments at the site. There are display boards at the site that in addition to providing navigation information also trace the history and current water management practices in the Washes, the Middle Level System and associated watercourses.

There are a number of active canoe clubs in Cambridgeshire and Norfolk but their use of the waters within this plan is relatively small.

#### **5.11.8 Regulatory Framework**

Our powers and duties with respect to navigation are most clearly stated in the Anglian Water Act (1977), these include regulating (setting levies), maintaining and improving the waters and facilities made available to the public. Regional recreation byelaws within this Act also regulate boat registration, boat safety and speed limits. Boat owners should also familiarise themselves with the contents of the Recreational Waterways (Registration) Byelaws (1979) and the Recreational Waterways (General) Byelaws (1980).

#### **OTHER RECREATION ACTIVITIES**

#### **5.11.9 General Perspective**

The Agency encourages public involvement in appropriate water-based recreational activities and it has the ability to utilise land owned by ourselves for this purpose or encourage other riparian owners to make their river banks accessible to the public. In all cases, the special needs of disabled persons should be considered.

The Agency discourages swimming in all inland waters on two accounts; firstly the risk of drowning, and secondly there is an inherent danger from water borne diseases.

As stated earlier, the Agency supports the conclusions of the Zone 1 of the Water Recreation Strategy for the Eastern Region in relation to these activities.

#### **5.11.10 Local Perspective**

The Ouse Washes are recognised as one of the most important conservation sites in the country, as a result it attracts many visitors during the year. The main activities, in addition to the angling previously mentioned, are bird watching and wildfowling.

The Ouse Washes are an internationally important overwintering site for migrant birds. The Agency has directly contributed to the two main bird viewing sites at Welney and Welches Dam, both have seen recent improvements to permanent hides and other facilities. These sites provide an unshot refuge and see a high volume of visitors over the winter, peaking in February. The Wildfowl and Wetlands Trust manage the Welney reserve, where a floodlit viewing of the swans and ducks is an increasingly popular pursuit. The disabled access to a large heated main hide should be commended. The Welches Dam reserve is looked after by the RSPB and the Wildlife Trust and have in total 10 hides that provide extensive views of the Washes.

There are three wildfowling clubs who own and hire out areas of the washes, the largest being the Fenland Wildfowlers. A small number of other individuals have access to the land and operate day-ticket shoots.

#### **Issue 8: Access to Ouse Washes via the Cradge Bank**

There are a significant number of public footpaths on the floodbanks, used by ramblers and dog walkers. The linear nature of these public rights of way limits their use to access points near roads. The Wildfowl and Wetlands Trust organises a summer walk which offers a unique opportunity for access to the actual washes. The Agency has recently financed the construction of a car park at Mepal which improves access to the washes for walkers and bird watchers. In addition a 15m long wooden footbridge over the Old Bedford/Counterdrain was constructed and has provided a circular walk utilising the South Level Barrier and Mepal road bridge.

The Mepal Outdoor Centre operates as a charitable trust and is open to the public. An 8ha water filled pit is used for sailing, canoeing and windsurfing mainly by youth groups and those with disabilities. The centre also can accommodate residential courses. Other pits nearby managed by Chatteris Aqua Sports offer water skiing and personal watercraft activities.

There are a number of historic clay pits south of Peterborough, Kings Dyke Pit is one of such and as an unusually long water body it is periodically used for water skiing. Gildenburgh Water near Whittlesey is a commercial scuba diving centre.

The Ouse Washes also support other recreational activities. There are a few bridleways that allow horse riding and cycling, and during the winter deliberate flooding of fields allows the traditional sport of ice skating to be performed. This latter activity is also performed on Well Creek when conditions allow. There are two nearby microlight clubs, flights over the washes require strict regulation to protect waterfowl and grazing stocks.

Listed in our Recreation and Conservation Database are Agency sites which are or could

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be utilised by the public. Within this plan area are the grassland banks in the Washes that have available footpaths. These include Middle Fen Bank, the North Bank of the Old Bedford/Delph, the Hundred Foot Bank, the Cradge Bank (north) on the Hundred Foot River, the North and Low Banks on the Old Bedford/Counterdrain. At Salters Lode Sluice there is a footbridge. Under our duties to improve access to Agency land, works have been undertaken on the 6km Tidal Ouse Bank between Mepal and Oxloode. The existing footpath has been upgraded and a fence provided between the river bank and bridleway for the tenant graziers.

In addition to the Washes there are other nature reserves within the area which encourage public visits. Woodwalton Fen is managed by EN whilst the other of note is Holme Fen.

#### **5.11.11 Regulatory Framework**

We have an important role in forming partnerships with others in developing policies and providing facilities which will achieve the sustainable use of water and land for recreation.

There are many other bodies which have a role to play in improving recreation and amenity, most notably Local Authorities, CoCo and English Sport.

The Agency's regulatory powers are limited to byelaws and recognising recreation opportunities primarily on land or waters that we own.

### **5.12 The Natural Environment**

#### **5.12.1 General Perspective**

The Agency is entrusted with the role of protecting sites and species of high conservation value and rehabilitating impoverished or degraded areas. Working in partnership with other groups our remit may, in the future, extend beyond rivers and wetlands to include terrestrial habitats.

East Anglia is rich in wildlife, and over one third of the key species and important habitat identified in the 'UK Biodiversity Action Plan' are found here. However, over the past decades, dramatic declines in habitat and species have occurred, making what remains even more precious.

Of significant relevance to the Agency is the element of biodiversity which is dependent upon the water environment - both within the river corridor and in sites of conservation value which are water dependent. The 'in river needs' of the aquatic ecosystem and also the bankside community are directly related to water levels, flow velocity and water

quality factors such as effluent dilution and siltation. The conservation of wetland sites is reliant both on maintaining a responsible surface water hydrological regime and monitoring abstractions within the wetland groundwater catchment area.

### 5.12.2 Local Perspective

The Middle Level is bordered by the Middle Level Barrier Bank of the Ouse Washes to the East, by Marshland and the South Barrier Bank of the River Nene to the North and a natural watershed of low hills from Peterborough to Somersham to the west and south. The watercourse system is managed for land drainage (some 70,000 ha) and flood defence purposes, most of the man-made watercourses are, therefore, predominantly trapezoidal in cross section. Most rivers have embankments due to drains being within the floodplain. It is believed that a narrow marginal fringe is present in most watercourses, the limited macrophyte growth tends to be managed using mechanical cutters or herbicide. The drain depths range between 2-3 m water depths over a silty substrate.

The MLC Conservation Strategy Group was formed in 1993 to develop a Conservation Strategy for the Middle Level watercourses. The group's members are representatives from the IDBs, the Agency and EN who seek to highlight conservation opportunities during routine operations and specific improvement works where appropriate.

#### *Management of Sites of Special Scientific Interest (SSSIs)*

The dual function of the Ouse Washes for flood relief and summer grazing, and its large size (32 km in length and an area of 2403 ha) has led to the evolution of an internationally important wildlife site.

The eleven SSSIs within the area are detailed on Map 16. A distinction is made between those which are water dependent and those which are not. These sites are managed in consultation with EN.

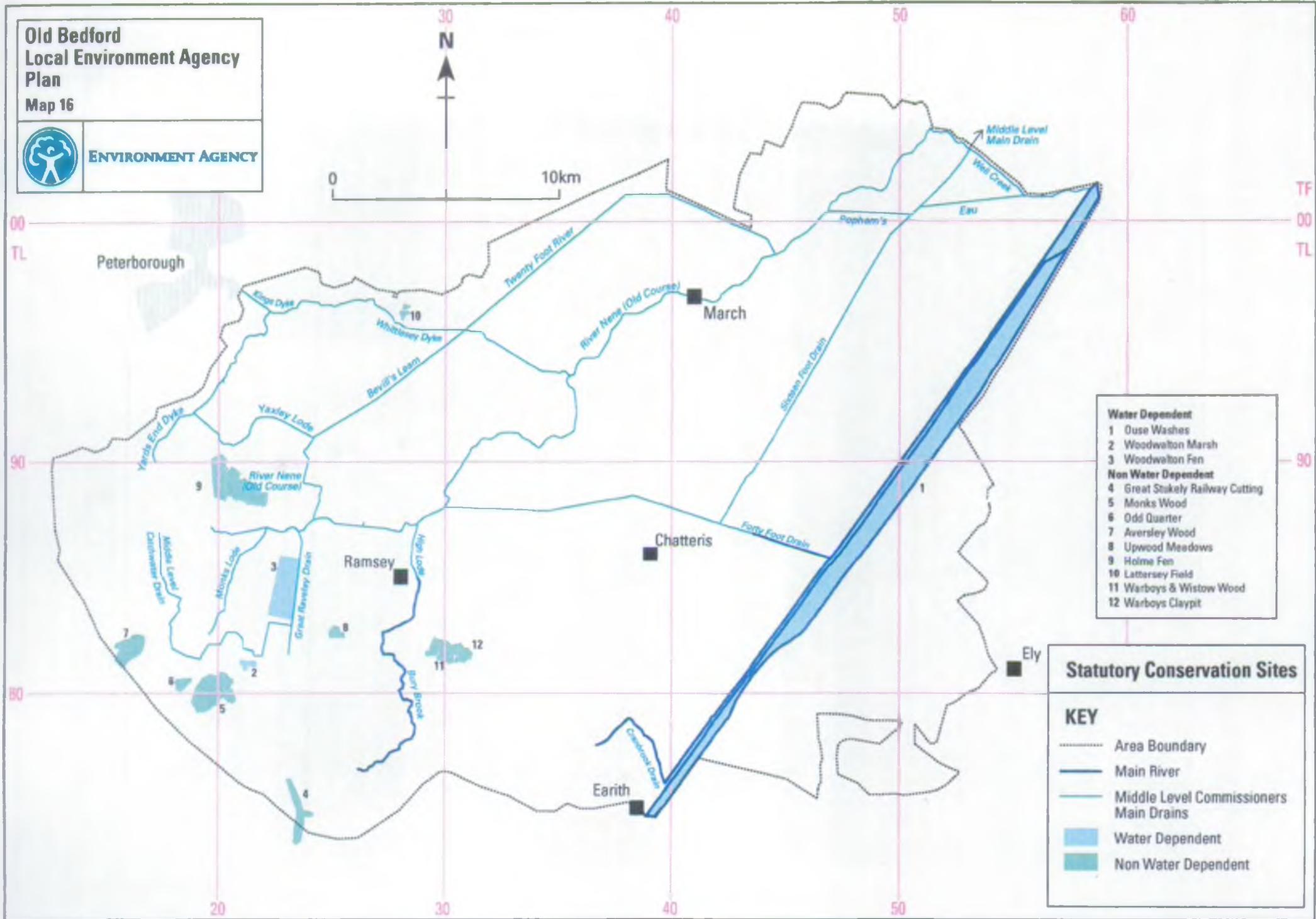
Recently Government has asked for the preparation of Water Level Management Plans for Sites of Special Scientific Interest or other areas of high ecological or landscape importance. The Agency liaises with EN to prepare a plan to ensure appropriate key water levels are safeguarded. Within this LEAP area, Water Level Management Plans have been prepared for the Ouse Washes (although this has not been fully endorsed as yet) and the Woodwalton Fen National Nature Reserve in the Middle Level system and Holme Fen by Holmewood and Stilton IDB.

**Old Bedford  
Local Environment Agency  
Plan**

Map 16



ENVIRONMENT AGENCY



- | Water Dependent     |                               |
|---------------------|-------------------------------|
| 1                   | Osse Washes                   |
| 2                   | Woodwalton Marsh              |
| 3                   | Woodwalton Fen                |
| Non Water Dependent |                               |
| 4                   | Great Stakely Railway Cutting |
| 5                   | Monks Wood                    |
| 6                   | Odd Quarter                   |
| 7                   | Aversley Wood                 |
| 8                   | Upwood Meadows                |
| 9                   | Holme Fen                     |
| 10                  | Lattersey Field               |
| 11                  | Warboys & Wistow Wood         |
| 12                  | Warboys Claypit               |

Statutory Conservation Sites	
<b>KEY</b>	
	Area Boundary
	Main River
	Middle Level Commissioners Main Drains
	Water Dependent
	Non Water Dependent

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The Ouse Washes are an internationally important wetland and the unique habitat area has been designated as a SSSI, a Ramsar site and a SPA (Special Protection Area). It is also currently under consideration as a candidate SAC (Special Area of Conservation). EN in partnership with the Agency, RSPB, Wildfowl and Wetlands Trust, Cambridgeshire Wildlife Trust, IDBs, wildfowling clubs and landowners are committed to a Management Strategy for the Washes; this encourages traditional management solutions to retain the functions and nature conservation importance for the site so benefitting all parties.

#### **Issue 1: Support & Develop candidate SACs**

EN and the Agency are currently working on a conservation strategy and consenting protocol for the Old Bedford riverine SSSI.

Woodwalton Fen Nature Reserve (208 ha) lies within the Middle Level, it is dependent upon this system for its wetland water level. The Fen is a Ramsar site and like the Washes is a candidate for SAC designation. Holme Fen is recognised as a National Nature Reserve and covers some 259 ha south of Peterborough.

Within the plan area, conservation information is limited to five waters only and was last updated in 1995. The Forty Foot (to Horseway lock), the Old Bedford/Counterdrain and Cranbrook Drain, are all similar waters; relatively narrow uniform channels within the floodplain. The emergent macrophytes, sweet reed grass, branched bur reed and canary reed grass are common in the margins. The most abundant submerged and floating species are the white and fringed lily, arrowhead, Canadian pondweed and duckweed. The raised banks are predominantly coarse grasses with some tall herbs and occasional shrubs. There are virtually no trees present.

The Old Bedford/Delph is a wider water course with similar in-stream vegetation. Its banks have a much more diverse plant community with both trees such as willows and smaller aquatic species that inhabit the damp bank slopes.

The Hundred Foot is a wide uniform drain. The channels' flora is restricted due to the saline influence from tidal waters. There is however some marginal species with sweet reed grass and reed canary grass predominating. Coarse grasses, tall herbs and the occasional willow are found on the banks.

Throughout the 'Old Bedford' area, the principle of 'Buffer Strips' for watercourses might be considered by landowners.

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### **5.12.3 Regulatory Framework**

We have a duty to conserve and enhance the natural beauty of inland and coastal waters and associated land, plus the flora and fauna which are dependent on the aquatic environment. We should also seek to promote the conservation of natural beauty and wildlife that depends on the aquatic environment.

Many of our conservation activities are governed by Water Resources and Land Drainage legislation, most recently the Environment Act 1995. Sections of the Wildlife and Countryside Act (1981) are also relevant.

The Agency consults widely with external organisations and in particular EN and the County Wildlife groups on issues such as the EC Habitats Directive and the management of designated wildlife sites.

## **5.13 Landscape and Heritage**

### **5.13.1 General Perspective**

The historic landscape and heritage assets of the environment include features of the countryside such as hedges, walls, ditches, meadows or archaeological features such as castles and bridges. Some sites, protected or managed for their historic interest are also valuable for wildlife and as a result can form important habitats (see Section 2.3).

Change of land use and development (including farming practice and flood defence works) may result in ground disturbance and alter water levels which may risk the integrity of the site. Water levels may also be critical in preserving remains.

### **5.13.2 Local Perspective**

In the Old Bedford area there are 21 Scheduled Ancient Monuments, these are shown on Map 17.

Peat deposits provide an ideal protection for as yet unfound fenland archaeology. The waterlogged soils must be returned for organic remains and other buried items to survive.

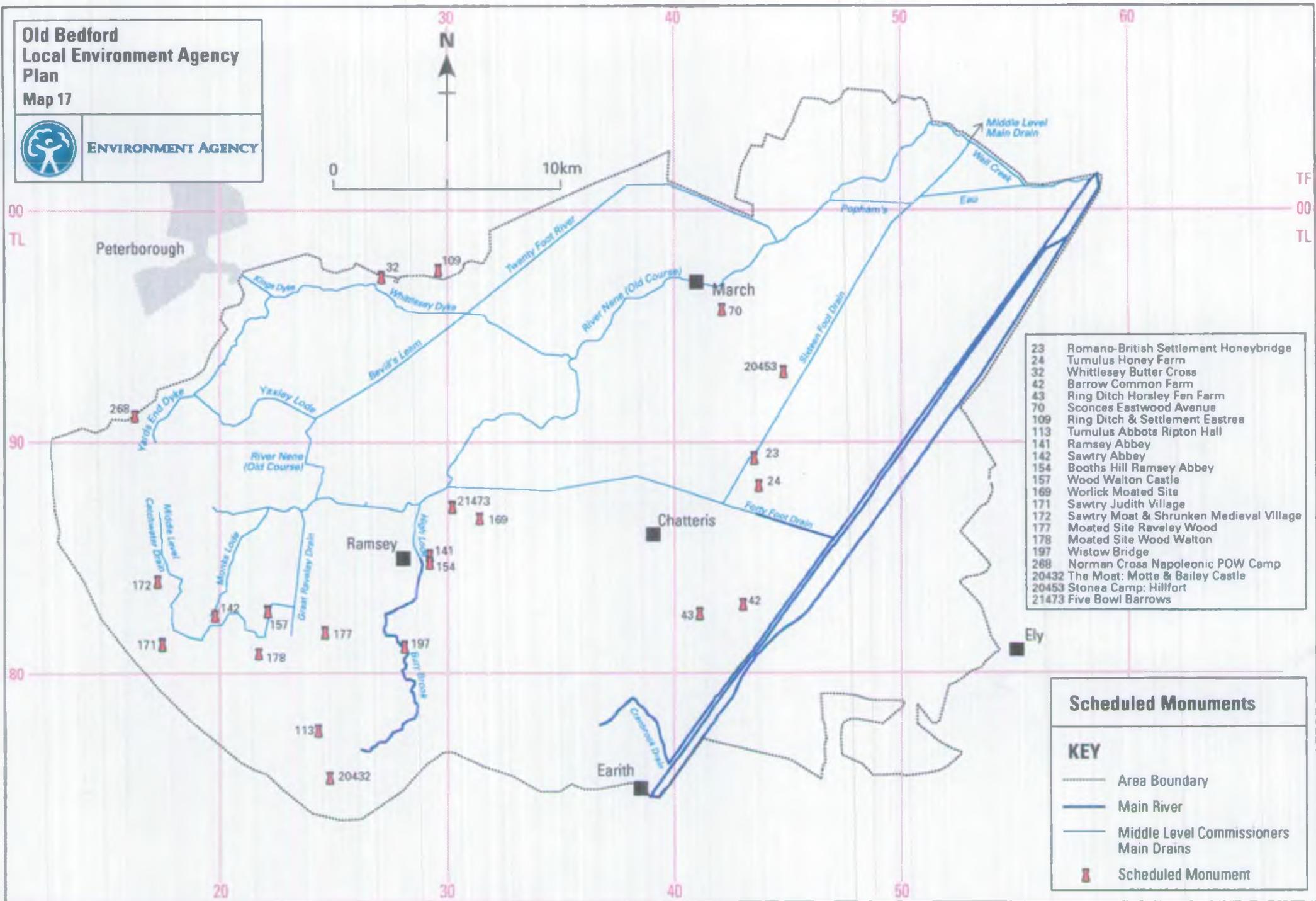
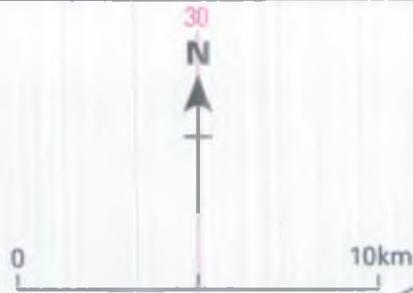
### **5.13.3 Regulatory Framework**

The protection of landscape and historic features (as well as wildlife) is addressed through the promotion of the Environmentally Sensitive Areas (ESA) scheme administered by MAFF, and its incorporation into various other legislation. Countryside Stewardship agreements offer similar incentives to farmers.

**Old Bedford  
Local Environment Agency  
Plan  
Map 17**



ENVIRONMENT AGENCY



- 23 Romano-British Settlement Honeybridge
- 24 Tumulus Honey Farm
- 32 Whittlesey Butter Cross
- 42 Barrow Common Farm
- 43 Ring Ditch Horsley Fen Farm
- 70 Sconces Eastwood Avenue
- 109 Ring Ditch & Settlement Eastrea
- 113 Tumulus Abbots Ripton Hall
- 141 Ramsey Abbey
- 142 Sawtry Abbey
- 154 Booths Hill Ramsey Abbey
- 157 Wood Walton Castle
- 169 Worlick Moated Site
- 171 Sawtry Judith Village
- 172 Sawtry Moat & Shrunken Medieval Village
- 177 Moated Site Raveley Wood
- 178 Moated Site Wood Walton
- 197 Wistow Bridge
- 268 Norman Cross Napoleonic POW Camp
- 20432 The Moat: Motte & Bailey Castle
- 20453 Stonea Camp: Hillfort
- 21473 Five Bowl Barrows

**Scheduled Monuments**

**KEY**

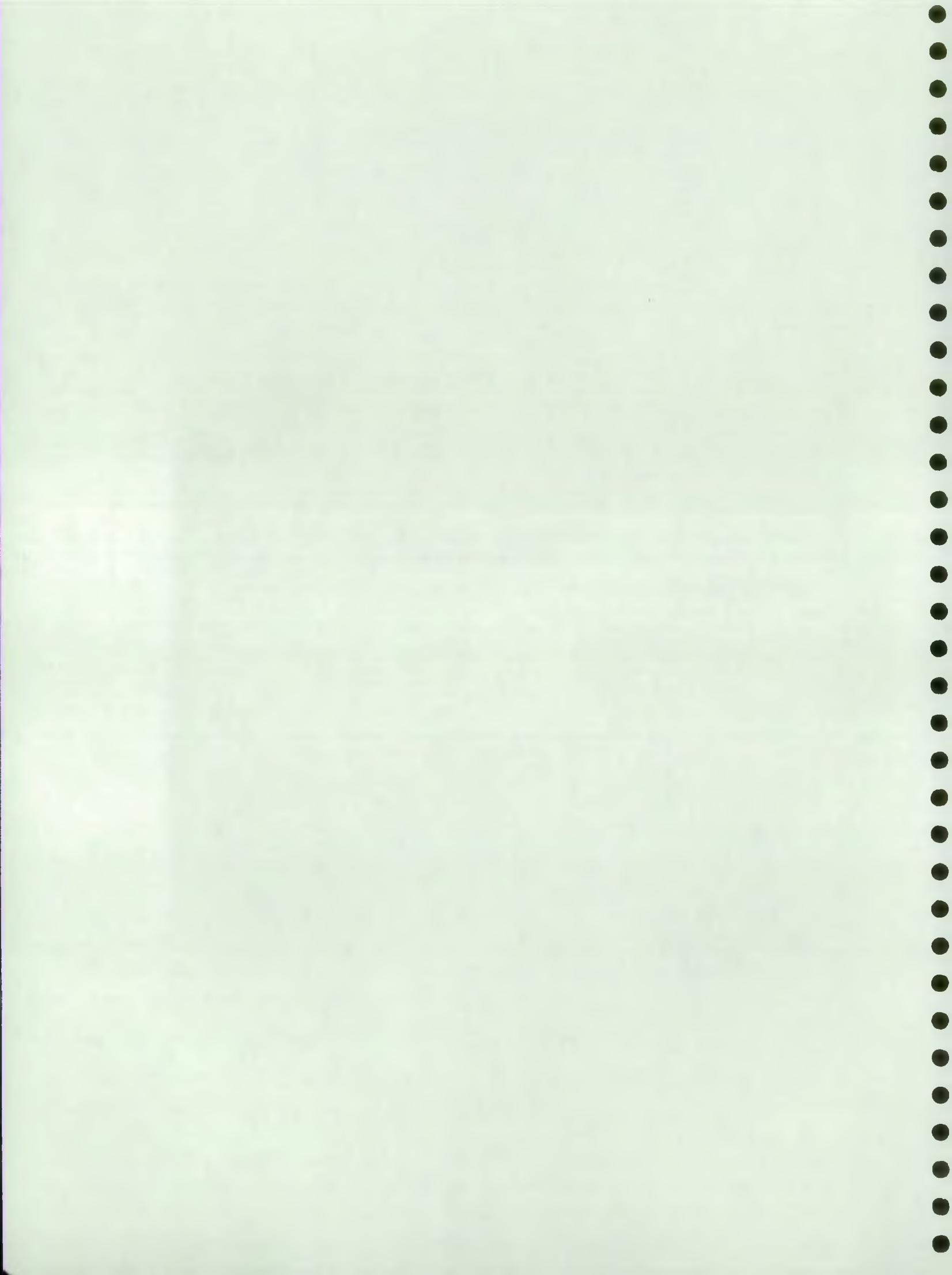
- Area Boundary
- Main River
- Middle Level Commissioners Main Drains
- Scheduled Monument

The Agency has a statutory duty to conserve and enhance landscape and archaeological features. We must be particularly aware of water associated sites affected by ground water levels and our main river operational works.

We have a duty to protect both formally designated areas, such as Areas of Outstanding Natural Beauty (managed by CoCo) and Scheduled Ancient Monuments (managed by English Heritage/Dept of National Heritage), and those sites with no statutory designation found within the plan area. From an operational perspective we fully consult the County Archaeologist on any scheme, where appropriate.

## **SECTION SIX - STATE OF THE LOCAL ENVIRONMENT**

**This section provides information on the current state of the environment in this area and assesses this against any targets. Any shortfall between them could be deemed to be an issue to be addressed through this LEAP.**



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## SECTION SIX - STATE OF THE LOCAL ENVIRONMENT

### 6.0 Introduction

The Environment Agency is committed to reporting on the State of the Environment (SoE) and has a duty to form an opinion on the state of pollution under the Environment Act 1995. SoE reporting will look at pressures placed on the different environmental media individually and as a whole, and should help to identify trends which can assist in establishing overall operational priorities. This is being done parallel with the SoE reporting which has already been initiated by many local councils as part of Local Agenda 21 (see Section 4) to which the Agency has already contributed data on various 'environmental indicators'. The aim of continuing this exercise in LEAPs is to ensure that the Agency continues to keep our knowledge of environmental matters as up to date as possible and useful to decision makers and local communities alike.

The Agency initiated this process through the production of 'The Environment of England and Wales - A Snapshot' in April 1996. It was felt that in order to further the objectives of sustainable development, it is important to increase awareness of the various issues involved, particularly with regard to the various pressures which are exerted on the environment.

In many cases, information is not readily available or doesn't exist to be able to make an assessment of how changes in these pressures reflect on environmental quality and so each LEAP will take up the challenge of directing future data collection and assessment of their impact at a local level to assess the SoE. The pressures have already been described in Section 5 and now this section will look at their combined impact on Air, Land and Water Environments, where possible, and suggest investigation into the aspects which have not been analysed before.

Given below is a description of the monitoring the Agency undertakes. The types of chemicals or species measured are deemed to be our best available indicators of environmental change. These help us to make an assessment of all the environmental media and their animal and plant life and hence make judgements as to their sustainability, in light of any future development. However, the LEAPs process helps us to re-assess current monitoring and whether other indicators should also be included. We regularly monitor many environmental parameters as part of our routine business to assess the SoE. It is within this context that statutory and mandatory targets can be set to ensure protection and enhancement to the environment.

The State of the Local Environment section will aim to set out the monitoring, targets, status, trends and data availability for the listed environmental indicators or parameters under the categories of Air, Land, Water and Wildlife.

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## 6.1 The Air Environment

### 6.1.1 General Perspective

The air that surrounds us is of great concern to people since we depend on it directly to sustain good health. Air pollution can cause serious problems for those with asthma, bronchitis and other respiratory diseases. Air quality is also an indicator of environmental quality and can damage flora and fauna, buildings and have significant effects on soils and water.

The atmosphere is a medium which not only allows life on earth to exist by providing oxygen to terrestrial organisms, but does so through its protective shielding from solar radiation and its regulation of the earth's temperature. It also acts as a transport and transforming medium for many chemicals and changes in its state can have environmental effects at global, regional and local levels. One of the best examples is that of acid rain, where discharges to one medium can have a long term effect, at a distance, on the others. Urban air quality on the other hand, can vary over very short periods of time.

The quality of air can be diminished or otherwise affected by a number of different factors, the main ones being associated with the weather. The types of pollutants that can affect air quality include ozone, carbon monoxide, nitrogen oxide, sulphur dioxide and volatile organic compounds. Under the EPA90 responsibilities for the control and monitoring of air quality is placed upon the local authorities and the Agency. The relative roles are defined by the Act.

#### *The Environment Agency's Role*

The Environment Agency is only one of a number of regulatory bodies concerned with air quality. However, we have been given a national coordinating role. Our direct responsibilities with respect to air quality are exercised through the system of Integrated Pollution Control (IPC), explained in Section 5.3. This requires the Agency to regulate discharges from some 2500 of the most polluting industrial processes to not only air, but also water and land. In regulating these processes, specified as Part A processes under the EPA90, the Agency monitors the quality of emissions from each site. In order to assess the impact of each process on air quality, the Agency may also carry out general monitoring in the neighbourhood of some of these authorised processes. Once its contribution to local air quality has been assessed, options to vary the quality, amount and medium to which an emission is discharged can be examined using the concept of Best Practicable Environmental Option (BPEO).

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### ***The Role of Local Authorities***

The Agency's regulatory function is only concerned with a very small proportion of the total industrial base. Under EPA90, local authorities are charged with regulating the potentially less polluting industrial processes. These constitute the vast majority of sites. This regulatory function, coupled with their responsibility to oversee discharges to air from domestic and more diffuse sources, as well as odours and noise pollution, mean that they are the principal body concerned with general air quality in a given locality.

### ***The Role of Central Government***

The Government has made clear its intentions with respect to air quality under the Environment Act 1995. This included the requirement to produce a National Air Quality Strategy, to set the framework for more local actions, detailing standards and objectives relating to air quality and measures for the achievement of those objectives. This Strategy was published in late March 1997. The Act also requires local authorities to review and assess air quality in their areas. Where standards are not being met or are not likely to be met, the local authority is obliged to create a local air quality management area and draw up an action plan aimed at improving the local situation. Many local authorities are setting up air quality monitoring networks, often in conjunction with their neighbours, to obtain an accurate picture of air quality.

#### **6.1.2 Air Quality Monitoring**

As yet there has been no standard method set for obtaining air quality data. Currently local authorities operate a great variety of monitoring systems, each measuring different pollutants in differing degrees of thoroughness. Air quality in this area is assessed by a combination of active and passive monitoring. Active, or continuous monitoring, uses equipment which collects data every 15 minutes, the results being available almost immediately in an electronic form. The passive monitoring is carried out by measurement over a longer period of time, normally 24 hours and upwards, and this allows the state of the environment to be analysed only after that time period has elapsed.

#### **6.1.3 Objectives**

##### ***Standards Controlling Atmospheric Pollutants***

The Agency is required to ensure that statutory Environmental Quality Standards (EQS) (for air and water) are not exceeded. EQSs for air are set for four substances; Nitrogen Dioxide, Sulphur Dioxide, Suspended Particles, and Lead. Further EQS will shortly be established for Benzene, 1,3 Butadiene, Carbon Monoxide, Ozone, and Polycyclic Aromatic Hydrocarbons (PAH).

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The sources of Air Pollution are many and varied, but arise principally from combustion processes and natural sources. They can be categorised into domestic, electrical supply, other industry and road transport. Each source contributing different levels of the principal atmospheric pollutants. However, statistics produced by the DoE indicate road transport as the main source of air pollution with respect to black smoke, nitrogen oxides and carbon monoxide, 90% of the latter emanating from the road system.

The main atmospheric pollutants are described below.

#### *Oxides of Nitrogen (NO<sub>x</sub>)*

Oxides of Nitrogen (NO<sub>x</sub>) are formed by the reaction between nitrogen and oxygen in the combustion process. The main sources are vehicular emissions closely followed by industrial processes. The gas is usually released as nitric oxide, which in the presence of sunlight can be converted to the more toxic NO<sub>2</sub>. The gas is an irritant which can cause breathing problems and increase susceptibility to viral infection. Both gases react with water in the atmosphere to form a weak acid or acid rain which damages trees, crops and buildings. They also contribute to global warming (ie, they are 'greenhouse' gases).

#### *Sulphur Dioxide*

Sulphur Dioxide (SO<sub>2</sub>) is both a naturally occurring gas and one produced by human industrial activity. Whilst about 20% of the world's atmospheric SO<sub>2</sub> is produced by volcanic eruption, of the rest the majority is derived from the combustion of fossil fuels with a high sulphur content, ie, coal and heavy oil. Consequently coal and oil burning power stations are the major source of SO<sub>2</sub> along with vehicle emissions. However with less coal currently being burned, the Clean Air Act 1956 and improved technology to clean emissions, the release of SO<sub>2</sub> has declined dramatically in the last 40 years. SO<sub>2</sub> is an irritant to both eyes and throat and can cause serious harm to those with respiratory problems. SO<sub>2</sub> also contributes to acid rain.

#### *Ozone*

Of increasing concern is the increase in both urban and rural levels of ozone. While essential in the upper atmosphere to protect against damaging ultraviolet radiation, the presence of ozone in the lower atmosphere is particularly dangerous for people who suffer from breathing difficulties. Its concentration has increased through human activity in recent years. It is directly emitted to the atmosphere but created in complex chemical reactions between oxides of nitrogen and other volatile organic compounds in sunlight. Vehicular emissions are therefore believed to be the major contributor to the ozone problem.

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### *Particulate Matter*

Sources of particulate air pollution can both be human or natural. Naturally occurring particulate matter can arise from sea spray, wind erosion of rocks and plant matter such as pollen. The principal human source is emissions from the combustion of fossil fuels, particularly coal and diesel fuel. Additionally, 'secondary' particles can also be formed by the chemical reactions of gases in the atmosphere. The effects on human health and the environment depend upon the composition of the matter concerned, although it is believed that the release of fine particulates, particularly from diesel fuels can have an adverse effect on the human respiratory function. Particles of particular concern are those of a size less than or equal to 10 microns (ie, one hundredth of a millimetre), which are known as PM<sub>10</sub>s. These are easily transportable in normal air currents and are small enough to penetrate the air tracts of human lungs.

### *Carbon Monoxide and Dioxide*

Carbon Monoxide (CO) is regarded as a prime indicator of air quality. It is a colourless and odourless gas which, if inhaled, enters the bloodstream and disrupts the supply of oxygen to the body's tissues causing cardiovascular and respiratory problems. Its largest source is from petrol engine exhausts, particularly cars which are accelerating or stationary in traffic. Carbon Dioxide (CO<sub>2</sub>) is also released during fossil fuel combustion. Whilst it is not directly harmful to human health, it is a minor greenhouse gas. An average car emits approximately 4 tonnes of CO<sub>2</sub> over an average year's mileage (12000 miles).

### *Lead*

Lead is released to the atmosphere during the combustion of leaded petrol. During the 1970s and early 1980s research showed that its presence in the air could result in retarded learning or even brain damage, especially amongst children. Consequently, since the mid 1980s, leaded petrol has steadily been withdrawn and unleaded introduced. The use of this alternative has been encouraged by associated financial incentives and has resulted in a dramatic drop in atmospheric urban levels in the last 10 years. This demonstrates the type of action which can be taken to reduce harmful atmospheric pollutants.

### **Other Influences on Air Quality**

The concentration of an air pollutant in the atmosphere determines the severity of its effects on the people and environment within any area. Ground level concentrations of pollutants are determined by the degree of dispersion which is, in turn, largely a function of the prevailing meteorological conditions at a given time. These conditions can be categorised as wind direction and speed, atmospheric stability and mixing depth of the

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air.

It must be emphasised that the vast majority of air pollutants arise from diffuse sources including the natural environment.

### **National Air Quality Strategy**

The complex interactions between weather conditions, chemical processes, distances that air pollution can travel, and the number and diversity of possible sources make understanding causes and effects and attributing responsibility difficult in cases of air pollution. Prevention of pollution, therefore, depends on the establishment of local air quality targets. The Environment Act 1995 extended responsibilities of Local Authorities to establish action target standards for air pollutants so as to improve the environment. The Government published its National Air Quality Strategy in late March 1997 - for which the Agency is a statutory consultee.

The system is based on clear and measurable targets bound, as far as possible, on the understanding of the health effects of the pollutants concerned. Eight pollutants have been identified:

Benzene	Nitrogen Dioxide	Sulphur Dioxide	Lead
1,3-Butadiene	Ozone	Carbon Monoxide	Particles (PM <sub>10</sub> )

Eventually, it is intended that a two level target will be set. One will be a guideline figure to represent the level at which the pollution has been rendered harmless to health or the environment, or at which it is unlikely that further benefit could be obtained from spending more on abatement. The other, a higher level than the guideline figure, will be a trigger which distinguishes when air quality is so poor that an immediate response would be justified to prevent serious damage

All the objectives are to be achieved by the year 2005. A duty is placed on Local Authorities to carry out a review of air quality in their area and assess whether the standards and objectives are likely to be met. If the objectives are not likely to be met, then they are required to set up an Air Quality Management Area. Using various powers available to Local Authorities such as land use planning, Local Authority Air Pollution Control, smoke control, transport planning, traffic management, and urban environmental management, the Local Authorities are required to set up an action plan with the objective of meeting the targets. Regulations are to be made to give Local Authorities further specific powers governing the development of these plans.

The role of the Environment Agency is to act as a consultee on the National Air Quality

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Strategy and be consulted on regulations to give effect to action plans. The Strategy is likely to require the exchange of information from the Environment Agency, the Local Authorities, and a protocol is being developed for this.

The strategy acknowledges the role of Agency (and its predecessors) has had in reducing industrial emissions (especially oxides of sulphur) in the past.

#### **6.1.4 Status**

The area covered by this plan is essentially rural with no major urban centres. Air quality has not given rise for concern and for this reason little information is available from monitoring of air quality. Using data from other rural monitoring sites else where in the country it can be assumed that the quality of the air within the majority of the area to be very good.

However the effects of releases from other sources such as roads in particular the A1, and urban areas outside of this LEAP area such as Peterborough City, Cambridge City, Huntingdon, Ely and Wisbech and roads such as the A14 may have an significant impact on the area under some weather conditions.

#### **6.1.5 Trends**

Generally Air quality has been improving in recent years and these improvements are set to continue over the next decade. The new systems for dealing with industrial pollution, introduced by the EPA90, new vehicle standards, and other measures aimed at mitigating the environmental effects of traffic are addressing the reduction of emissions. The UK confidently expects to meet its existing international commitments for reductions in emissions of NO<sub>2</sub>, SO<sub>2</sub> and volatile organic compounds.

There remain, however, important challenges and uncertainties. For example, the recurrence of ozone episodes, particularly in summertime, and the recent publication of research into the effect on mortality of the wintertime smog episode of December 1991 have again raised public concern about air quality.

#### **6.1.6 Comments on the quality and availability of data**

There is little significant data with respect to the air quality within the area. There are national, regional and local networks outside of the area but these often utilise differing methodologies of analysis. This results in extrapolating the data to other areas unreliable.

Hanson Brick Limited have for several decades been undertaking some limited long term

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monitoring of the ambient air around the brickworks. The results from this work have indicated a general improvement in air quality and the quality is good. However the work is limited to the monitoring of sulphur dioxide and hydrogen fluoride only.

## **6.2 RADIATION DOSE RATES TO THE PUBLIC**

### **6.2.1 General**

The majority of radiation a member of the public will be exposed to is due to natural radiation (87%). The remaining 13% is artificial radiation, 11.5% is medical (eg, radiotherapy and X-rays). Only 1.5% is attributable to mans other activities such as nuclear power, etc.

### **6.2.2 Monitoring**

At RAF Wyton there is a monitoring station which is part of the Radioactive Incident Monitoring Network (RIMNET) which covers the country. These stations continuously monitor the background gamma radiation. This site is one of 92 across the country and is the only site within this area. The typical reading at this site indicates the background gamma radiation dose rate of 0.1 microgray per hour.

## **6.3 The Land Environment**

### **DERELICT & CONTAMINATED LAND**

#### **6.3.1 General**

The Environment Agency has specific duties under the Environment Act 1995 with respect to contaminated land. The Agency's aim is to secure with others the remediation of contaminated land. This is defined as any land which appears to a local authority to be in such a condition - because of the substances it contains - that water pollution or other significant harm is being or is likely to be caused. This interpretation is still subject to guidance by the Secretary of State and is also likely to be subject to a cost-effective means being available to carry out remediation. This guidance will also outline the giving of advice and technical guidance to local authorities to enable them to carry out their responsibilities in relation to contaminated land; the provision of planning consultation responses to local authorities and the preparation of a national report on contaminated land. Some sites may become designated as 'special sites' and these will become the responsibility of the Agency. None have yet been designated. Until guidance on 'special sites' is provided, contaminated sites will not be cleaned up by the

**Agency.**

Cleaning up these sites can contribute to sustainable development; by reducing the damage caused by past activities, permitting contaminated land to be returned to beneficial use and thereby minimising pressures for new development on green field sites.

**6.3.2 Monitoring**

Until the regulatory criteria for assessing potential sites are known it is not possible to determine which types / histories of contaminative use will be subject to the Agency's control.

**6.3.3 Status**

The regulations are only at a consultation stage at the time of writing and may well change significantly before implementation, which is expected to be by January 1998. It is, therefore, not possible to identify any locations which will be subject to the forthcoming requirements at present.

**WASTE MANAGEMENT****6.3.4 General**

Our aim in waste regulation is to protect the public and the environment from the potentially adverse effects of waste treatment and disposal primarily through the waste licensing system, to promote the minimisation of waste production and to ensure that the future waste management needs of the area are assessed and information on the need for waste facilities is provided to local planning authorities and the DoE to guide in the development of strategy.

**6.3.5 Monitoring**

The monitoring of waste management facilities is a statutory duty and the guidance is set out by the DoE as part of the Waste Management Paper No. 4. Monitoring frequency is established by this guidance and site visits are dependant on the category and risk of each facility. A table in Appendix C sets out this frequency for the separate categories. The licence conditions for landfill sites require the site operator to monitor land fill gas, leachate levels and the quality of ground and surface water and other indicators such as litter. Licence conditions are established for other types of waste management facility depending on the risk that each operation imposes. The environmental monitoring carried out by site operators is audited by the Agency.

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The statutory waste management strategy for England and Wales will be prepared by the DoE with guidance from the Agency under the Environment Act 1995. The first survey of waste arisings must be finished before this strategy can be completed.

### 6.3.6 Objectives

#### Objective 1

**Ensure waste management activities do not compromise groundwater, surface water or air quality through effective regulation and enforcement.**

The main targets are:

- Audit landfill site operators environmental monitoring data for landfill gas, groundwater and leachates and undertake check monitoring at the rate of 25% of the operator monitoring frequency required in their licence.
- The detection and regularisation of applications of controlled wastes to land.
- The regularisation of scrap metal facilities where pollution control infrastructure works are required to achieve exempt status.
- Systematic prosecution of cases of illegal waste management activity.

#### Objective 2

**Minimise the quantities and hazardous nature of wastes requiring landfill disposal via waste producer education and reduce the overall quantities of waste arising:**

- reduce the proportion of controlled waste going to landfill to 60% by 2005; and
- recover 40% of municipal waste by 2005.

The main targets are:

- Deliver waste minimisation, re-use and recycling education.
- Give effective multifunctional advice on resource wastage minimisation to industry.
- Undertake waste producer surveys to generate a National Waste Survey Database

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for use in determining national waste strategy and progress towards achieving targets.

- Guide waste producers on waste management legislation to ensure that wastes are managed correctly.

### 6.3.7 Status

The level of enforcement activity is not always an accurate indicator of illegal activity which may be occurring, since it is often in connection with specific campaigns. Similarly figures for licence condition contraventions are not reliable indicators unless they are broken down by specific waste management activities and operational aspects being controlled.

### 6.3.8 Trends

#### *Sustainable Waste Management Strategy*

In December 1995, the Government published a white paper entitled 'Making Waste Work: A Strategy for Sustainable Waste Management in England & Wales' which sets out future policy and provides new targets for the recovery of municipal waste and composting. The White paper makes it clear that the Government expects changes in waste management practices to be predominantly market-driven.

The strategy is non-statutory and has three broad objectives:

- To reduce waste generation;
- To make the best use of waste;
- To increase the proportion of wastes managed by options towards the top of the waste hierarchy (see below);

(a) the reduction / prevention of waste

(b) the re-use of waste

(c) the recovery of waste via recycling, composting and energy recovery

(d) the safe disposal of waste which cannot be recovered.

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More emphasis is now placed on the producer, rather than concentrating solely on regulating the disposal site. The use of regulatory standards by Government has enabled certain disposal options to be made more expensive and thus concentrate the waste producers' minds on the need to eliminate or reduce the amount of waste they produce. This use of statutory standards for certain disposal methods (eg, landfill) and economic instruments, such as the landfill tax to increase disposal costs, are being utilised by Government in its waste management strategy. The introduction of the Producer Responsibility (Packaging Waste) Regulations 1997 is also part of this trend.

In line with broad national strategy, we encourage the minimisation of the amount of waste requiring disposal. This is undertaken by a programme of visits to waste producers seeking changes in philosophy, and assisting in moves, where possible, towards waste avoidance, re-use or recycling. Such producer visits also allow collation of data for the National Waste Database and the identification and regularisation of unsuitable waste management practices.

The increasing cost of waste disposal is becoming an attractive incentive to minimisation waste generation levels in general.

Since the issue of the UK Management Plan for Exports and Imports of Waste, which sets out the UK policy with respect to control of trans-boundary waste shipments, the import of most wastes for disposal is banned.

Waste treatment operations which may constitute 'sham recovery operations', involving the shipment of waste for recovery (which to be viable relies on the recovery residue disposal price being lower in the importing country), are being investigated and such shipments systematically objected under the Regulations. Since consumption of local landfill capacity by any imported material will not have been accounted for in determination of the overall disposal need at the waste management planning stage, this is a valid ground for objection under the Regulation in the case of large volume imports.

The region as a whole is seeing importation of metal recovery wastes for recovery of the non ferrous metal content which gives rise to substantial quantities of non metallic residues requiring disposal by landfill.

As restrictions on the quantities of these wastes which are acceptable at individual sites have been introduced via licence modifications, the importers/ processors of these wastes are looking further afield for disposal capacity. This could involve landfill sites within the report area in the future. Any excessive additional haulage distances or displacement of domestically produced wastes will need to be assessed on an individual application basis and objected to where the proposal is not in line with the UK Plan.

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Also, the diversion of wastes to legal non licensable activities such as application of wastes to land has occurred since the introduction of the land fill tax.

### **6.3.9 Comments on the Quality and Availability of Data**

Time series data on the quantities of wastes being produced and disposed of is currently inadequate. This is being addressed by the National Waste Survey in order that progress towards waste reduction targets can be assessed in future.

The Public Register contains details of all waste management licences issued; applications made, statutory notices effecting modification, suspension, revocation; certificates of completion; details of appeals; general enforcement notices; details of court action taken and conviction details; both the Agency's and licence holder's environmental monitoring data; records of special waste disposals and details of registered waste carriers and brokers.

In particular, the application of controlled wastes to land requires notification and registration as an exempted waste management activity, so that the loadings and waste types proposed can be assessed in relation to the needs of the receiving land and risks to water. Awareness of this requirement is generally low, resulting in some activities going unrecorded or monitored. Records of waste applications to land such as industrial treatment effluents and food processing wastes, are therefore incomplete.

## **6.4 Soil Quality**

### **6.4.1 General**

The Old Bedford area has some of the most fertile and productive agricultural soils in Britain. The majority of the area is fenland, with soils derived from peat or marine alluvium. These very productive soils are graded 1 and 2 on the Agricultural Land Classification (ALC) map (see Map 7). At the west and south margins of the plan area, soils are typically derived from chalky till, or the underlying clay and are graded 3 on the ALC map. Most of the soils are highly productive and central to the prosperity of farming in the Fens, but draining and cultivation have caused the peat to waste away over time. Consequently the remaining extent and quality of these soils have been significantly reduced. (See 5.6 Agriculture & Forestry-The Sustainability of Agriculture).

### **6.4.2 Monitoring**

Monitoring of soil degradation in the Fens has been carried out by the Soil Survey and Land Research Centre, Cranfield University, Silsoe. The Soil Survey has been involved in mapping, describing and sampling soils in the Fens since 1950. These early data form

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an important archive and are the basis of monitoring the state of these soils, which are changing more than any others in the country.

#### **6.4.3 Status & Trends**

Drainage and cultivation have caused oxidation and shrinkage of the peat with the result that the peat surface in areas of the Fens has been lowered by nearly 4 m over the last 140 years. Current shrinkage is occurring at an average rate of 1 cm per year. The areal extent of the peat soils has been reduced to 16% of that which existed 300 years ago. The maximum extent of the peat within the Fens in the 17th Century was 1480 km<sup>2</sup> but today it covers only approximately 240 km<sup>2</sup>. Of the peat soils that remain, more than 56% are less than 1 m thick.

As Peat wastage continues the surface organic layer shrinks and the mineral sub-soil with a much lower organic matter level becomes incorporated into the plough layer, forming 'skirt soils'. Skirt topsoils become increasingly depleted of organic matter reserves with continued agricultural use. Once the large reserves of soil organic matter in peat and skirt soils are lost, there is no possibility of replacement through conventional agricultural management.

#### **6.4.4 Quality and Availability of Data**

The Soil Survey and Land Research Centre at Silsoe has collected, over the years, a vast quantity of data relating to soil changes in the Fens. The quality of this data has enabled the Soil Survey unit to undertake studies into the future implications of soil degradation in the Fens and initiatives to arrest its progress.

### **6.5 The Water Environment**

#### **FLOOD DEFENCE**

##### **6.5.1 General**

For a general description, see Section 5. The standard of flood defence provided depends on the type of land being protected and the type of flooding risk.

##### **6.5.2 Monitoring**

We undertake the general monitoring of those flood defences for which we are responsible as part of our ongoing work. We also carry out surveys to identify flood risk areas.

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### 6.5.3 Objectives

The Environment Agency's aims for flood defence are to:

- Provide effective defence for people and property against flooding from rivers (and the sea);
- Provide adequate arrangements for flood forecasting and warning.

The Agency has commissioned a review of flood defence standards of service for Main River (and Sea Defence) while existing maintenance standards are based on historically-determined criteria, return periods and frequencies. This review will assess 'Land Use' by considering agricultural or urban content within the flood plain along lengths of river divided into 4-7 km reaches. For each element (eg, road, house, grazing) a score is given and the reach is placed into one of several Land Use Bands to guide assessment of priorities when determining maintenance programmes. This review will, therefore, influence maintenance requirements for the future and provide a rational basis for future flood defence priorities.

Flood defences do not provide absolute protection, but alleviate flooding up to a particular level of severity. The standard of protection provided normally relates to the land use of the area concerned, where urban defence attracts a high priority.

The detailed Agency objectives for this activity within the LEAP area are:

- To provide effective defence for people and property against flooding. The standard of protection to be appropriate to the land use, where this is economically viable;
- To control development and works in or adjacent to the Main River in accordance with the Agency's Flood Defence byelaws such that the risk of flooding is not increased;
- To ensure that the river topography remains suitable for the efficient passage of high flows and that control structures are adequately operated and maintained (for both flood and normal flows);
- To provide adequate arrangements for flood forecasting and warning;
- To carry out maintenance in Main River where necessary to protect people and property to the appropriate standard;

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- To carry out flood defence works with reference to the environmental needs and requirements (see Issue 7);
  - To maintain the long-term flood defence capacity of the Ouse Washes between the Middle and South Level Barrier Banks (see Issue 8) to protect against a fluvial or tidal flood event with a return period of up to 1 in 100 years;
  - To maintain the long term flood defence capacity (see Issue 2) of the Old Bedford/Counterdrain/Cranbrook Drain system to protect against flooding and provide storage capacity for IDBs.
  - To provide increased control of Counterdrain/Old Bedford River water levels to control seepage;
  - To maintain the Ouse Washes in a condition to accept flood waters (see Issues 3 and 4) when flows in the River Ouse at Earith exceed acceptable levels, and from IDB Pumping Stations;
  - To drain the majority of surface floodwater from the Washes by the end of April through a gradual lowering of levels in the Old Bedford/Delph River, with optimum levels at Welches Dam of:
    - 0.8 m OD to 7 April
    - 0.7 m OD to 14 April
    - 0.6 m OD to 21 April
    - 0.55 m OD to 28 April; and,
  - To maintain water levels in the Old Bedford/Delph River at 0.5 m OD at Welches Dam between May and October.

#### 6.5.4 Status

##### *Flood History*

Since the Ouse Washes were created in 1637 to provide the flood storage reservoir, the Barrier Banks and structures have been periodically modified and improved to meet the changing circumstances. After the floods of 1937 and 1947 the banks were raised, and after the 1953 tidal surge, the South Level Barrier bank between Denver and Welmore was raised and improved. In more recent times both Barrier banks have been improved and raised since 1990.

### *The Continuing Flood Risk*

The recent improvements to the Barrier Banks offer an enhanced level of flood defence, to a 1 in 100 year event (which now represents a low risk).

#### **6.5.5 Comments on the quality and availability of Data**

Regular surveys are carried out on flood embankments to comply with Section 105 of the Water Resources Act 1991.

#### **WATER RESOURCES**

#### **6.5.6 General**

The Agency has the responsibility of managing water resources in a sustainable and effective manner to achieve the right balance between the needs of the environment and those of abstractors and other water users, eg, ensuring that abstraction does not exceed the environment's ability to replenish itself. Management of water resources and regulation of abstractions are controlled by the abstraction licensing system (see Section 5).

#### **6.5.7 Monitoring**

The Agency has a statutory duty under the Water Resources Act 1991 to monitor water resources. This is achieved in the area by monitoring a number of locations where hydrometric information is gathered. The Agency is responsible for maintaining a network of recording stations on rivers, observation boreholes, rainfall and weather stations. Regular liaison with the meteorological office is maintained. River level and flow are measured at 15 minute intervals at a number of sites throughout the plan area (see Table 11). At a majority of sites, the information is processed and archived for future use (eg, in licence determination) and analysis.

**Table 11. River Level Telemetry Gauging Sites and Flow Gauging Stations**

<b>Station Name</b>	<b>River</b>	<b>Grid Reference</b>	<b>Level or Flow</b>
Salters Lode	Well Creek	TF 587 017	Level
Earith	Great Ouse and Old Bedford/Delph	TL 389 749	Level
Sutton Gault	Old Bedford/Delph	TL 428 797	Level
Welches Dam	Old Bedford/Counterdrain and Old Bedford/Delph	TL 471 859	Level

Station Name	River	Grid Reference	Level or Flow
Welney Causeway	Old Bedford/Delph and Old Bedford/Counterdrain	TL 529 939	Level
Welmere Lake Sluice	Old Bedford/Delph and Tidal River	TL 572 987	Level
Old Bedford Sluice	Old Bedford/Counterdrain	TF 585 015	Level
Stanground	Kings Dyke (Transfers)	TL 209 973	Flow
St Germans Pumping Station	Middle Level Main Drain	TL 588 142	Flow

The MLC also provide an operational level recording site at Bodsey Bridge (TL 294878) to aid control of abstractions under low flow conditions.

Some additional level data is gained from fortnightly gauge board readings at Porters Farm (TL 450881). Groundwater levels are monitored at an observation borehole (TL 481034) at Byall Fen near Manea (TL 450881).

Historical hydrological information needs to be examined in order to assess the current status. This includes calculating the water needs to, for example, maintain wetland sites.

### 6.5.8 Objectives

The National Objective of the Environment Agency with respect to water resources is:

- To manage water resources to achieve the proper balance between the needs of the environment and those of abstractors and other water users.

This is implemented by adherence to the statutory objectives defined in the Water Resources Act 1991 and Environment Act 1995. These objectives will be described below with a description of how successfully this has been achieved (the status).

In conclusion, the Agency aims to achieve a proper balance between valid requirements for water abstraction and other river uses such as navigation and environmental needs. This has been achieved during recent drought years by cooperation between the Agency, the abstractors, the IDBs, EN, Wildlife Trusts and other interested parties.

### 6.5.9 Statutory Objective 1 - 'Meeting Demands'

**To meet water demands to appropriate standards of reliability by augmentation and/or redistribution of water resources.**

- To achieve this objective the Agency will support appropriate standards for each use of water, as follows:

#### *Public Water Supply*

The Agency accepts the operational standards given by OFWAT for public water supply. These are:

- a hosepipe ban not more than once every 10 years;
- voluntary savings of water on average not more than once in 20 years; and,
- the risk of rota cuts or use of standpipes on average not more than once in 100 years.

These are essentially reference levels used for reporting. However, water companies are aiming to improve on these standards.

#### *Spray Irrigation*

The Region's target level of service for spray irrigation is that there should be risks of shortages not more than once in 12 years on average.

#### *Others - Industrial, Agricultural, etc.*

There is no specific target level of service for these uses.

### 6.5.10 Local Status - 'Meeting Demands'

#### *Public Water Supply and Industrial Use*

There is no evidence that water resource targets for PWS and industrial use are not being met.

#### *Spray Irrigation*

The lack of natural resources within the plan area means that irrigation demands are principally met through raw water transfers. This occurs during the dry summer months.

**Old Bedford  
Local Environment Agency  
Plan  
Map 18**



ENVIRONMENT AGENCY

30

N



40

50

60

0 10km

00  
TL

TF  
00  
TL

Peterborough

Twenty Foot River

River Nene (Old Course)

March

Popham's

Wool Creek

Eau

Middle Level Main Drain

90

90

Kings Dyke

Whitney Dyke

Bewick's Leam

Yaxley Lock

River Nene (Old Course)

Sydenham Foot Drain

Yards End Dyke

Yaxley Lock

Forty Foot Drain

Ramsey

Chatteris

Middle Level  
Catholme Drain

Moody's Lock

Great Ravenny Drain

High Lock

Forty Foot Drain

Earith

Cambridgeshire Drain

Ely

80

20

30

40

50

**Percentage of Land Licensed to be Irrigated**

**KEY**

- Area Boundary
- Main River
- Middle Level Commissioners Main Drains
- Light Blue: No Irrigation (Ouse Washes)
- Light Blue: 0-5%
- Dark Blue: 6-29%
- Pink: 30-49%
- Red: 50-70%

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Much of this transfer of water is for land drainage purposes and is exempt under the Water Resources Act 1991.

This practice relies on the cooperation with the Middle Level Commissioners and the IDBs to prevent a high proportion of the river flows being transferred during critical times by the partial closure of slackers. This has worked well during recent drought years. To ensure a better framework of control, the legislation would need to be changed.

**Issue 6: The Transfer of Water into IDB Drains via 'Slackers' is Not Controlled by the Water Resources Act 1991**

The 1 in 12 year target is not met, with irrigation restrictions necessary in all recent drought years (eg, 1976, 1990-92, 1995-96). Abstraction sourced from the Counterdrain has been restricted most years in the 1990s. This is because neither the local water resources nor that available for transfer into the catchment are adequate to meet the irrigation demand. The options available to improve the situation would be two fold: either store more water from the winter in reservoirs or import water from other areas (see Issue 11). This is a common issue across most of the Anglian Region.

Due to the inability to meet current demand no additional summer licences are likely in the foreseeable future.

**Issue 5: Summer Levels Cannot be Maintained in Old Bedford/Counterdrain**

**6.5.11 Statutory Objective 2 - 'Protect Resources'**

**To protect water resources from over-commitment and ensure water abstraction does not have an unacceptable effect on existing abstractors and on the environment**

- The Agency will provide the best assessments of water resource availability.
- The Agency will define the appropriate water levels, flows and quality required to maintain and enhance the water environment including washland and wetland sites of conservation interest (in order to ensure that abstraction is not authorised which will unacceptably affect these sites). As appropriate, the Agency will set River Flow Objectives for rivers in this LEAP area.
- To protect all groundwater as a potential future resource in accordance with the Groundwater Protection Policy.

**6.5.12 Local Status - 'Protect Resources'**

The summer surface water resources of most of the area are considered to be fully committed. The policy for the summer surface water resources of the area sourced from the Hundred Foot River is under review.

There is winter surface water available. There are no major aquifers in this plan area and groundwater is considered available in small quantities for local needs such as non-spray irrigation, from isolated gravel areas, subject to test pumping.

Renewals of existing entitlements to abstract are currently recommended but will be determined with reference to the current policy regarding time duration and cessation conditions. These conditions relate to flows/levels in the source rivers and abstraction is required to stop when the flow/level falls below this critical level. This has proved to be an effective way to control demand during drought years. The abstractor is able to check the situation by reference to a marker at a pumping station or flow/level gauging station. In the Middle Level, the abstractor is able to ring a dedicated telephone number to find out whether irrigation is permissible or not.

**Table 12. Cessation clauses resulting in full abstraction restrictions**

River / Drain	Cessation Level (m.SLD)	Location	Grid Reference
River Nene Old Course	99.45	Bodsey Bridge	TL 295 876
Counterdrain	100.91	Welches Dam	TL 471 859
Drain leading to 100 foot Pumping Station	97.25	Hundred Foot Pumping Station	TL 508 891

The management of the water resource is always under review and the reason that many licences are temporary allows the Agency to add improvements to future licence documents.

### 6.5.13 Statutory Objective 3 - 'Proper Water Use'

#### To ensure the proper use of water resources

- The Agency will define a framework within which water users can plan to meet their needs and will advise on possible constraints.
- The Agency will advise Planning Authorities on water resources aspects of their development plans, in accordance with the Regional and National Water Resource Strategy.

- 
- The Agency will promote the wise use of water and demand management.
  - The Agency will ensure that any future requirement for water is 'reasonable'. Consideration should be given to alternative supplies, demand management or recycling.

#### **6.5.14 Local Status - 'Proper Water Use'**

Proper use of water is occurring within the plan area. Justification for the abstraction of water is checked when an application for an abstraction licence is examined. The quantities recommended on any licence document are those considered reasonable and in some cases the quantities are less than those applied for. Details of how the justification is evaluated are as follows:

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##### ***Public Water Supply***

The licensing horizon (15-20 years ahead) is currently 2011; it is not considered reasonable to allocate water for needs beyond this. The water company must have demonstrated that they have carried out effective demand management, reduced leakage to economic rates and, where water resources are under stress, considered metering of domestic use before extra water resources are allocated. In this LEAP, all PWS water is piped into the area from other catchments.

##### ***Spray Irrigation and Agriculture***

For spray irrigation licences, the requirements of water needed with respect to the type of crops and soil conditions are taken into account. For agricultural licences, the number and type of animals kept may be important in determining requirement.

##### ***Industrial***

The type of industrial process is considered as well as the life expectancy of the plant and equipment.

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#### **6.5.15 Statutory Objective 4 - 'Conserve Resources'**

##### **To conserve water resources**

- The Agency will adopt the principles of sustainable development and exercise the precautionary principle when assessing the requirements for further development of the water resources of the area.

- 
- The Agency encourages the storage of winter water in reservoirs.
  - There are benefits to water quantity (ie, the impact of the abstraction upon river flows will be minimised) if the discharge of water is made within the catchment and as far upstream as possible. However, water quality objectives often preclude this as an option.

#### **6.5.16 Local Status - 'Conserve Resources'**

With the many artificial effluent discharges and water transfers, the water balance is not easy to define. However, it is evident that in the summer all available water is conserved, whilst winter water is often pumped out into the Tidal river. At St Germans pumping station, the average daily winter pumping rate is 8.02 cumecs between November and March. To make use of some of this water, there are already several winter storage reservoirs in the catchment area. It is anticipated this will be the future way forward to secure water for summer use. The cost falls to the abstractor and in some cases reservoirs have been collective ventures for several abstractors together.

#### **6.5.17 Summary of Water Resources Situation Including Expected Trends**

Table 13 provides a summary of the area's status (present and future) relative to the water resources objectives. The effects of climatic change could see a continuation of drier summers. The current licensing approach in the Middle Level which ensures short duration of licences (8 years) reflects the importance of responding to these changes.

**Table 13. Comparison between the water resources objectives and status.**

	<b>OBJECTIVES</b>	<b>STATUS</b>
1	Meet Water Demands via Redistribution and Augmentation	PWS and Industrial demands are currently met. Future demands are not expected to rise significantly. Transfers are in place to aid Irrigation demands, but these are not adequate to meet demands in drought years.
2	Protect Resources from Over-commitment	There are no known areas where licensed quantity exceeds the available resource. Cessation clauses are in place to prevent environmental damage now and in the future.
3	Ensure Proper Use of Resources	The licence determination procedure ensures the proper use of water. The renewal procedure allows for future control on a regular cycle.
4	Conserve Water Resources	Optimum use is made of available summer water. Winter Resources are under-utilised, and winter storage reservoirs are strongly encouraged. Interest is growing and future applications for winter storage are anticipated.

**6.5.18 Comments on the Quality and Availability of Data**

In general, the quality of data is extremely good and is available to the public. The data collected provides a comprehensive view of water levels in the river system. However, the measurement of flows is less extensive. Sometimes for particular studies, this can be achieved through modelling techniques but even data derived from these sources are subject to a lack of quality input flow data. Initiatives that could improve the flow data coverage are:

- (i) Consider additional flow gauges on the Great Ouse upstream of Earith and/or downstream of Welmore Lake Sluice or Denver on the Tidal River. Prepare feasibility study and canvas opinion.
- (ii) Collect additional spot flow current meter data.
- (iii) Expand salinity monitoring to provide a better understanding of the saline wedge in the Tidal River/Hundred Foot River.

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**QUALITY OF WATER****6.5.19 General**

Our aim for surface water quality is to maintain and, where appropriate, improve the quality of rivers, through the preventing and control of pollution.

**6.5.20 Monitoring**

The Water Quality monitoring activities of the Agency are diverse and vary according to the local circumstances. Monitoring activities include statutory requirements for assessing compliance with EC Directives and environmental quality standards. More general assessment of the state of the Water Environment is also carried out to provide information at local and national level. Surface water quality is routinely monitored at a monthly frequency at 30 locations throughout the area. The analysis covers the key water quality parameters; dissolved oxygen, ammonia and BOD, as well as chloride, nitrate and phosphate.

**6.5.21 Objectives**

The Water Quality Objectives (WQO) scheme enables quality targets to be set according to what a watercourse is used for, eg, fisheries, public water supply, and provides an agreed planning framework for both regulatory bodies and dischargers. The proposed WQO scheme is based upon the recognised uses to which a river stretch may be put. Uses that could eventually be included are: River Ecosystem, Special Ecosystem, Abstraction for Potable Supply, Agricultural Abstraction, and Watersports. Standards defining the five River Ecosystem (RE) use classes, were introduced by the Surface Waters (River Ecosystem) (Classification) Regulations 1994. Standards for further uses are still under development. Until WQOs are established on a statutory basis by the Secretary of State, they will be applied on a non-statutory basis. These non-statutory WQOs will be used by the Agency for planning water quality improvements and assessing proposals for new or increased waste water discharges.

The WQO scheme allows for short and long-term objectives. Short term objectives may have to be adopted where water quality fails to meet the long term objective and there are no immediate solutions. In these cases a target date for achieving the long term objective may be set. Costs of schemes to meet long term WQOs will be considered against the likely benefits. This should ensure excessive costs are not incurred by dischargers and improvements are effectively targeted.

**Old Bedford  
Local Environment Agency  
Plan  
Map 19a**



ENVIRONMENT AGENCY

30 40 50 60

N

0 10km



See Ouse Washes Schematic Map

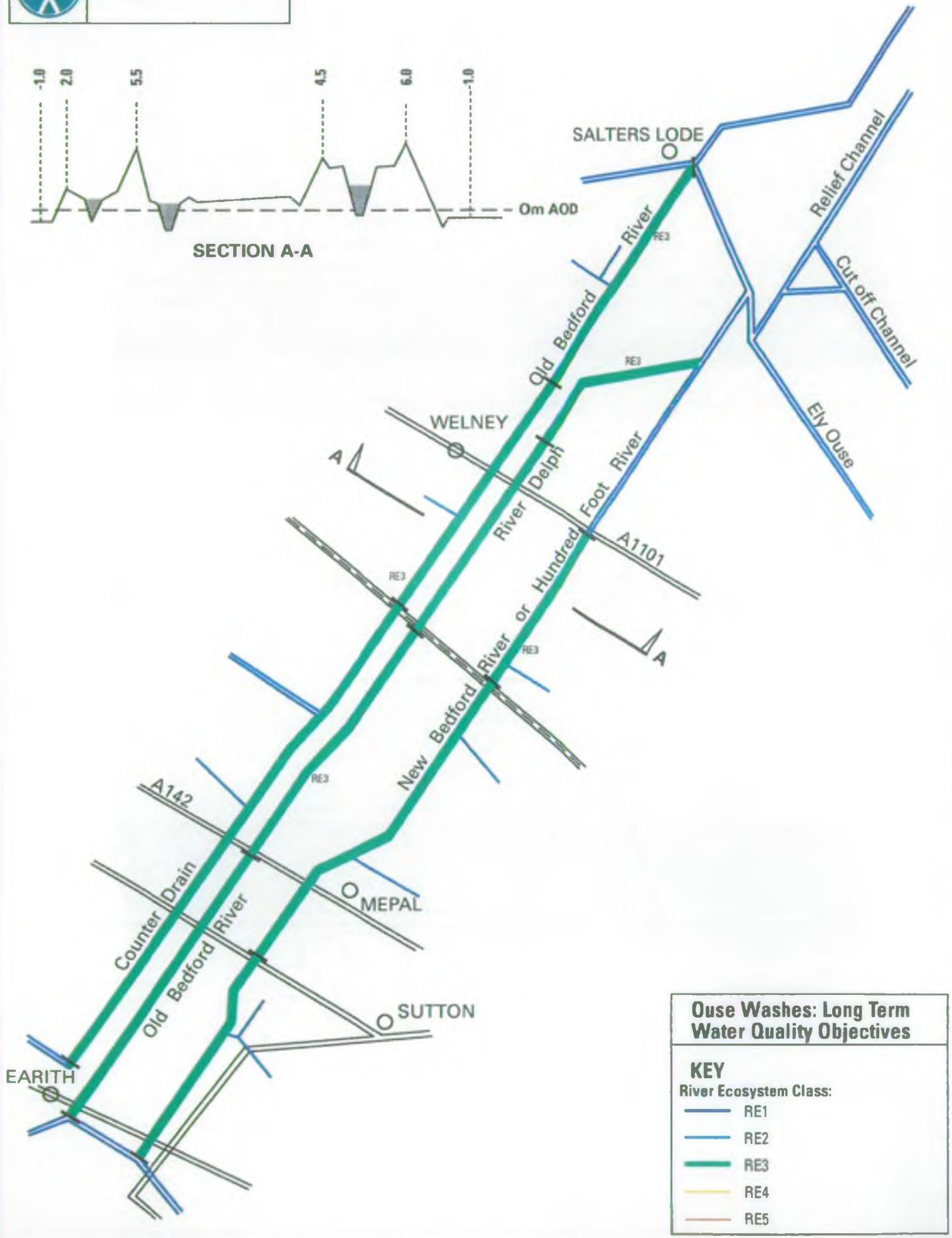
**Long Term Water Quality Objectives**

**KEY**

- Area Boundary
- Main River

**River Ecosystem Class:**

- RE1
- RE2
- RE3
- RE4
- RE5



**Ouse Washes: Long Term Water Quality Objectives**

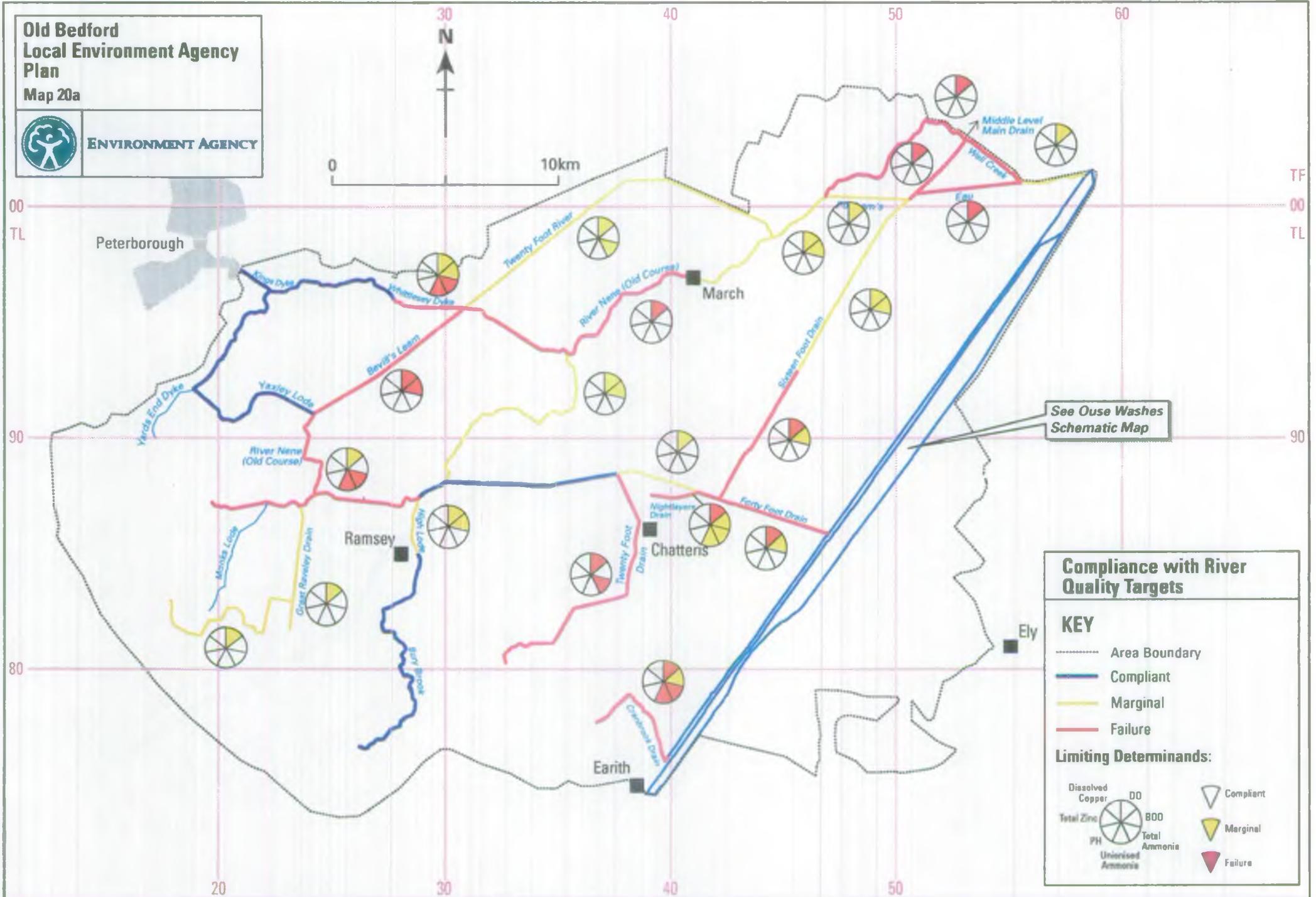
**KEY**  
River Ecosystem Class:

- RE1
- RE2
- RE3
- RE4
- RE5

**Old Bedford  
Local Environment Agency  
Plan  
Map 20a**



ENVIRONMENT AGENCY



See Ouse Washes Schematic Map

**Compliance with River Quality Targets**

**KEY**

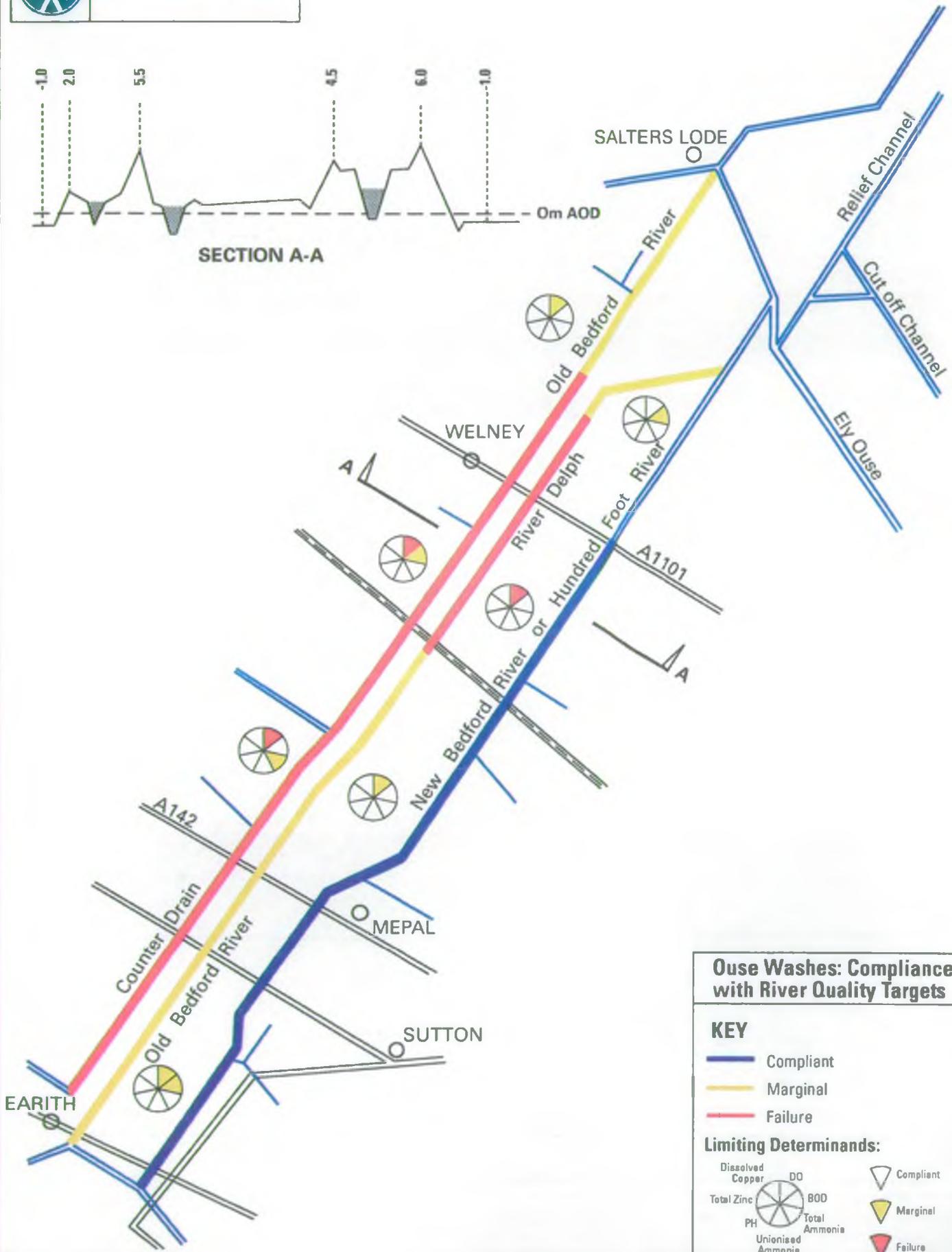
- Area Boundary
- Compliant
- Marginal
- Failure

**Limiting Determinands:**

- |                    |               |           |
|--------------------|---------------|-----------|
| Dissolved Copper   | DO            | Compliant |
| Total Zinc         | BOD           | Marginal  |
| PH                 | Total Ammonia | Failure   |
| Un-ionised Ammonia |               |           |



ENVIRONMENT AGENCY



**Ouse Washes: Compliance with River Quality Targets**

**KEY**

- Compliant
- Marginal
- Failure

**Limiting Determinands:**

- |                   |               |  |
|-------------------|---------------|--|
| Dissolved Copper  | DO            |  |
| Total Zinc        | BOD           |  |
| PH                | Total Ammonia |  |
| Unionised Ammonia |               |  |

The long term water quality objectives for the plan area are shown on Maps 19a & 19b. These have been set according to the current and potential future uses of the watercourses in the area. Compliance with these objectives is assessed using routine monitoring results from a rolling three calendar year period. Map 19a and b, shows compliance with the proposed long term objectives for the period ending 1995.

It is important that long-term objectives reflect the likely uses of the watercourses in the area and a public view on the potential uses for specific watercourses would be valued.

*We hope the public will take the opportunity presented by this LEAP consultation document to express any views they have on present and potential river uses in this plan area.*

**Table 14. Descriptions of the River Ecosystem Classes**

Class RE1	Water of very good quality suitable for all fish species
Class RE2	Water of good quality suitable for all fish species
Class RE3	Water of fair quality suitable for high class coarse fish populations
Class RE4	Water of fair quality suitable for coarse fish populations
Class RE5	Water of poor quality that is likely to limit coarse fish populations
Unclassified	Water of bad quality in which fish are unlikely to be present or insufficient data available by which to classify water quality

*Chemical standards have been derived for each of these classes and details of these standards are given in Appendix D.*

#### 6.5.22 Status

##### *Water Pollution Incidents*

In England and Wales there were 35,891 reported pollution incidents in 1995, of these 23,463 were substantiated. The National trend suggests an increase of over 27% since 1990, but this has been influenced by increased public awareness and the introduction of a freephone emergency hotline.

Within the plan area many incidents are caused by oil. The second important pollution type is the 'Others' grouping which includes mainly incidents associated with excessive weed growth. Most incidents are of minor significance.

Although sewage-related pollution incidents contribute only a small number to the recent statistics they have in the past accounted for serious incidents. A specific problem area is the old course of the River Nene in March Town Centre (see Issue 15). Several storm overflows discharge into the watercourse and have periodically caused fish mortalities following heavy rainfall.

Persistent problems associated with Septic tank overflows also exist in unsewered areas. Although these discharges mainly cause aesthetic and odour problems, they may also contribute to poor water quality. The main problem area is associated with the large unsewered area of Upwell and Outwell.

**Issue 18: Unsewered Villages - Upwell & Outwell**

**Table 15. Pollution Incidents in the 'Old Bedford' Area**

POLLUTION TYPE	1995			
	1	2	3	4
Oils	0	0	16	1
Sewage	0	0	4	0
Chemicals	0	0	3	0
Organics	0	2	0	1
Others	0	1	16	19
<b>TOTALS</b>	<b>0</b>	<b>3</b>	<b>39</b>	<b>21</b>

Category 1 are 'major' incidents, category 2 are 'significant', category 3 are 'minor' and category 4 are 'unsubstantiated'.

**Old Bedford  
Local Environment Agency  
Plan  
Map 21a**



ENVIRONMENT AGENCY

30

N



0

10km

40

50

60

00  
TL

TF  
00  
TL

Peterborough

Twenty Foot River

River Nene (Old Course)

March

Middle Level  
Main Drain

West Course

East

Alpham's

See Ouse Washes  
Schematic Map

90

90

River Nene  
(Old Course)

Ramsey

Chatteris

Ely

80

Earith

**Chloride Concentration  
(mg/l) 1995  
(95 Percentile Values)**

**KEY**

- Area Boundary
- Main River
- Middle Level Commissioners' Main Drains

**mg/l (95 Percentile Values)**

- >700
- 500-700
- 251-500
- 101-250
- <100

20

30

40

50

Kings Dyke

Whittsey Dyke

Bevid's Lode

Yaxley Lode

Mosses Lode

Great Ravensley Drain

Alpham Lode

Forty Foot

Twenty Foot Drain

Nightlayers Drain

Forty Foot Drain

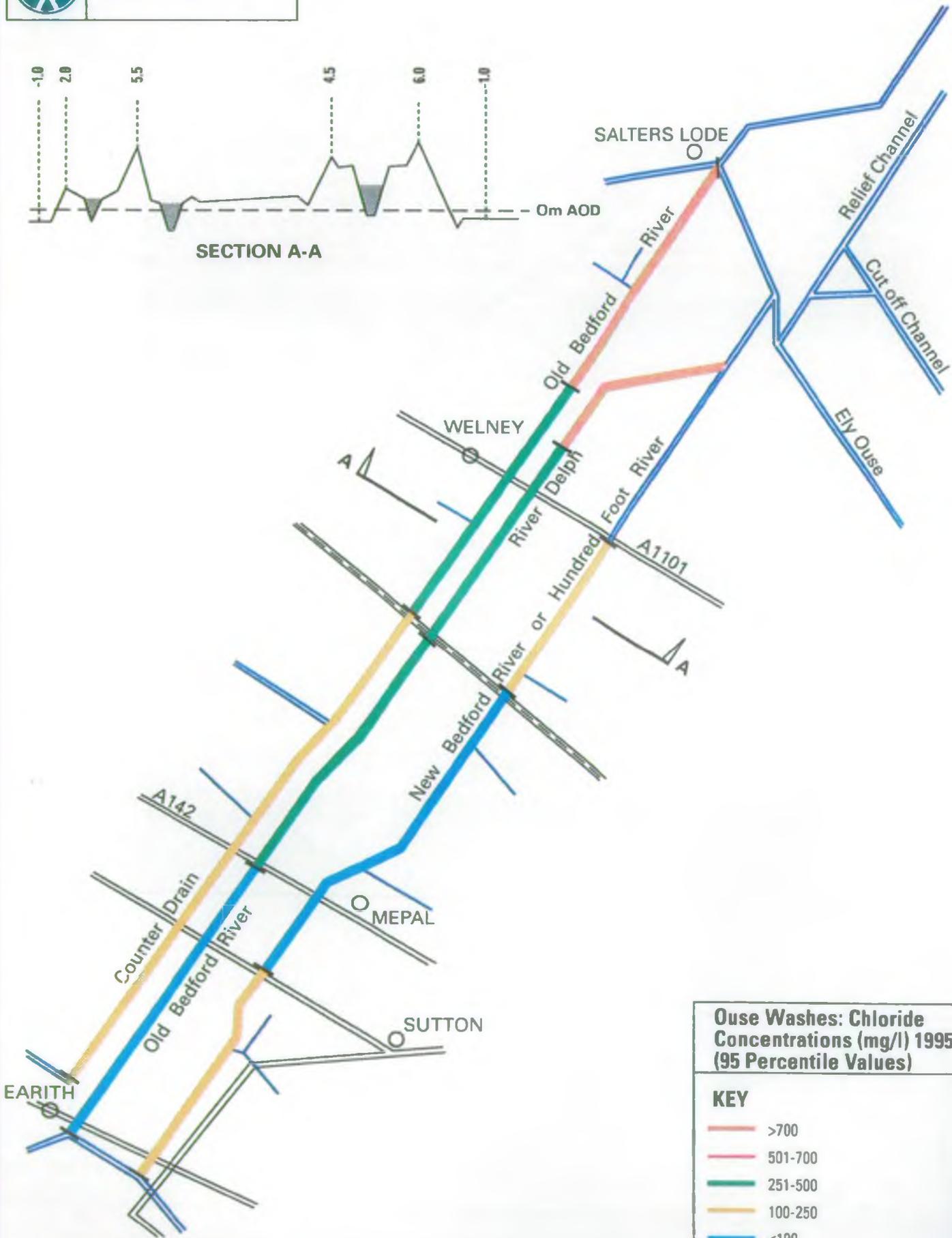
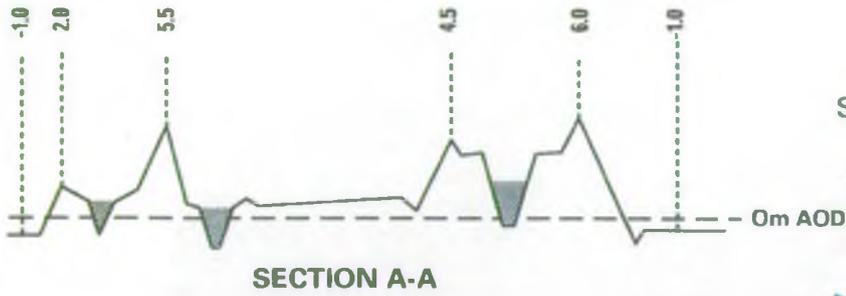
Chatteris Drain

**Old Bedford  
Local Environment Agency  
Plan  
Map 21b**

NOT TO SCALE



ENVIRONMENT AGENCY



**Ouse Washes: Chloride Concentrations (mg/l) 1995 (95 Percentile Values)**

KEY	
<span style="color: red;">—</span>	>700
<span style="color: pink;">—</span>	501-700
<span style="color: green;">—</span>	251-500
<span style="color: orange;">—</span>	100-250
<span style="color: blue;">—</span>	<100

Old Bedford  
Local Environment Agency  
Plan  
Map 22



ENVIRONMENT AGENCY

30

N



0 10km

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TL

Peterborough

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TL

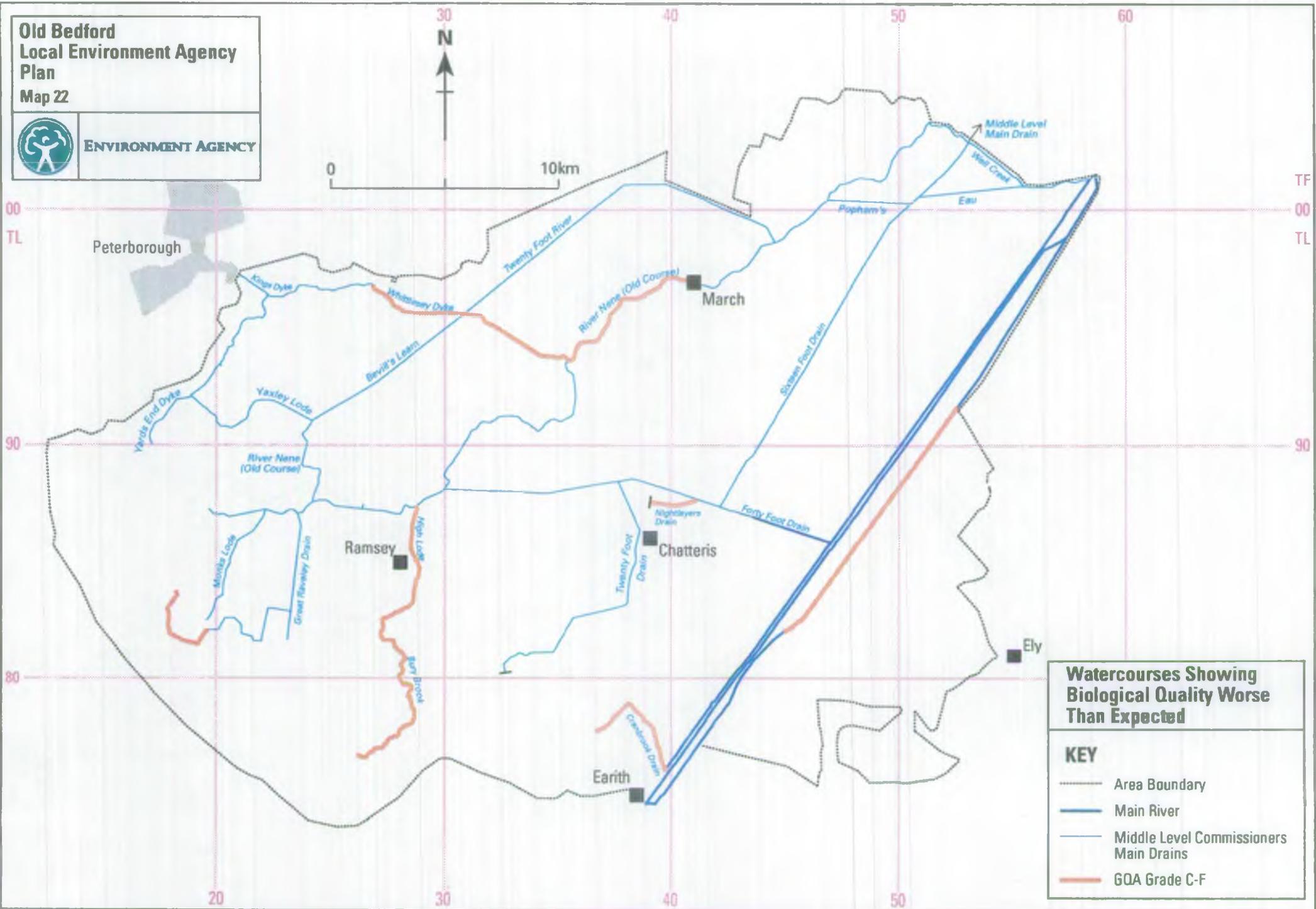
90

80

Watercourses Showing  
Biological Quality Worse  
Than Expected

KEY

-  Area Boundary
-  Main River
-  Middle Level Commissioners  
Main Drains
-  GQA Grade C-F



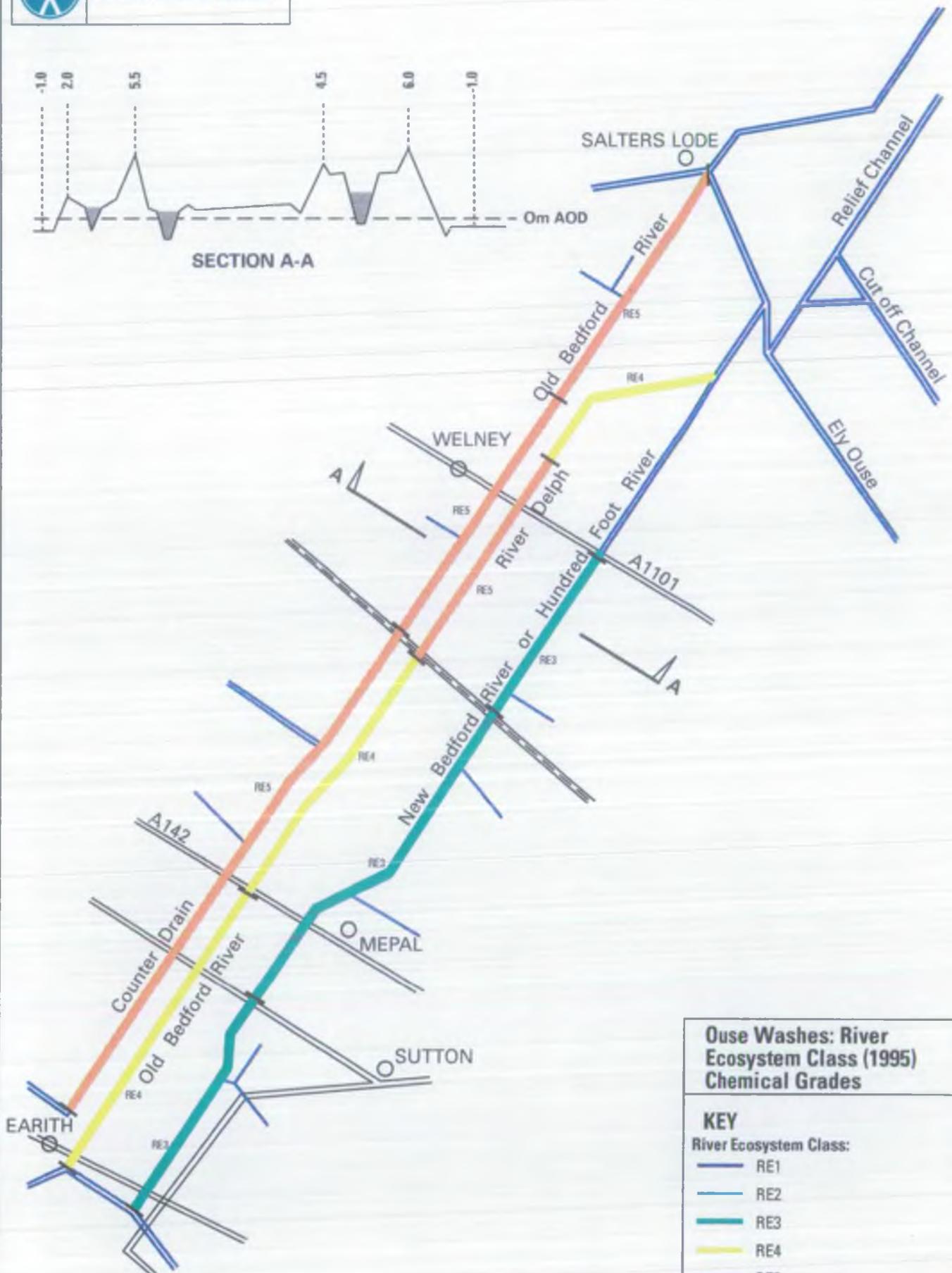




ENVIRONMENT AGENCY



SECTION A-A



Use Washes: River  
Ecosystem Class (1995)  
Chemical Grades

**KEY**

River Ecosystem Class:

- RE1
- RE2
- RE3
- RE4
- RE5

### ***Biological Water Quality***

The drains within the Middle Level System are generally characterised by a rich and diverse invertebrate community. Dragonflies, caddis, snails, waterbugs and beetles predominate. However, there are some lengths of watercourse where biological quality falls significantly short of the predicted quality, these are shown on Map 22. Locally poor habitat, such as absence of aquatic plants, low flow or water level variations may restrict invertebrate diversity. In other cases the effects of poor water quality associated with waste-water discharges restricts the biological quality (see also 6.6 Wildlife).

### ***Chemical Water Quality***

Maps 20 a and b show compliance with long-term WQOs. This shows clearly that dissolved oxygen levels are an important factor in limiting general water quality. Although, in most cases oxygen concentrations are adequate for invertebrates and the fish species which they support. However, oxygen concentrations do drop undesirably low in the summer, particularly when duckweed covers the surface of many of the Fenland drains.

## **Issue 17: Failure to Meet Water Quality Objectives**

Chloride concentrations are important where the water is abstracted for spray irrigation. In some areas chloride concentrations exceed the safe limits for irrigation of sensitive crops. The RQO for chlorine is 250mg/l (95 percentile). See Maps 21a and b.

### ***Performance of Discharges Against Consent Conditions***

In the Anglian Region, 98.5% of utility (AWS) STWs discharges are compliant with their current legal consent conditions (in 1996). Within the LEAP area, all of the main utility STWs complied with their legal consent.

Not all discharges have consents which limit the amount of pollutants sufficiently to ensure WQOs are achievable. When the performance of these discharges is better than the legal requirement water quality may not be seriously affected. However, if the performance of these discharges deteriorates to the legal limits, it is likely to cause unacceptable water quality and failure of the WQOs. Currently many STWs are performing well within the legal limits for the quality and/or quantity of effluent discharged. This situation may deteriorate when population growth occurs and operational performance approaches the consent limits.

The River Needs Consent (RNC) is a working estimate of the consent which may be needed in future to achieve long term WQOs. It has no legal force. Compliance is assessed against current Legal Consent and RNC for samples of effluent taken in the year ending December 1996.

**Table 16. Discharges where more stringent consent limits are necessary to achieve compliance with the long term WQO. Compliance with current Legal and RNC targets is also shown as Pass or Fail (in 1996).**

STW	DWF M <sup>3</sup> / DAY	CURRENT LEGAL CONSENT STANDARD	COMPLIANCE WITH CURRENT LEGAL CONSENT (1996)	RIVER NEEDS CONSENT (RNC)	COMPLIANCE WITH RNC
Benwick	150	35/30/25	Pass	25/15/5	Pass
Doddington	380	30/25/-	Pass	25/15/5	Pass
Holme	110	50/15/15	Pass	30/15/10	Pass
Upwood	300	30/20/-	Pass	30/15/5	Fail
Littleport	1300	30/15/5	Pass	20/15/5	Pass
Manea Town Lots	320	65/40/-	Pass	20/15/5	Pass
Oldhurst	800	40/30/6	Pass	40/20/10	Pass
Ramsey	1520	45/35/-	Pass	25/15/5	Pass
Sawtry	1100	60/60/20	Pass	30/15/5	Pass
Somersham	900	45/40/-	Pass	20/13/5	Fail
Witcham	425	30/20/-	Pass	30/15/10	Pass
Witchford	310	50/20/12	Pass	40/20/12	Pass
Whittlesey	2885	55/30/-	Pass	30/15/8	Fail
March	3500	45/25/10	Pass	30/20/6	Pass

*Key: Consent standards are for Suspended solids/BOD/Ammonia (mg/l) respectively. For example, 45/25/10 means that the consent standards are 45 mg/l suspended solids, 25mg/l BOD and 10mg/l Ammonia.*

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### **6.5.23 Comments on the quality and availability of data**

The Public Register, housed at our Regional Office at Peterborough, includes details of water quality classifications, applications for consent to discharge to water and consents issued. It also includes water and effluent sample data and action taken as a result of this data.

#### **EUTROPHICATION**

### **6.5.24 General**

Under the EC UWWTD, waters identified as eutrophic can be designated as Sensitive Areas. When waters are designated nutrient controls are required for discharges, unless it can be shown that this will have no effect on eutrophication. The UWWTD only applies to discharges from STWs serving a population greater than 10,000. These are known as qualifying discharges.

The Agency is carrying out environmental assessments of designated and potential Eutrophic Sensitive Areas and will be promoting potential candidates and helping the DoE with future reviews.

### **6.5.25 Monitoring**

The Agency is monitoring nutrient inputs and the effects of eutrophication to determine whether nutrient removal at STWs would be beneficial. Within the plan area there are 3 STWs of greater than 10,000 population where nutrient removal could be required. These are at Chatteris, March and Whittlesey.

### **6.5.26 Status**

Water quality is affected by prolific algal and duckweed growth which is encouraged by a plentiful supply of nutrients and the slow flowing nature of the watercourses. Spring and Summer plant growth often causes large variations in dissolved oxygen concentrations and pH, and elevated Biochemical Oxygen Demand (BOD). When algae and other plants decompose they can cause severe de-oxygenation. Extensive duckweed cover is also a common feature of many drains and this affects oxygen concentrations by shading algae and other sub-merged plants. As a result these nutrient rich or 'eutrophic' watercourses suffer from problems of occasional fish kills and require extensive weed control to prevent interference with land drainage.

<b>Issue 16: Adverse Effects of Eutrophication</b>
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## 6.6 Wildlife

### FISHERIES

#### 6.6.1 General

The Agency has a specific duty to maintain, improve and develop fisheries.

#### 6.6.2 Monitoring

Fish are one of the best indicators of the state of rivers and lakes. Healthy and abundant freshwater fish stocks will demonstrate our success in meeting water protection and water management objectives.

We survey as part of our routine fisheries programme all of the major water courses within the plan area, this amounts to 211 km of cyprinid fisheries. There are no designated salmonid fisheries present.

#### 6.6.3 Objectives

In Anglian Region, we classify rivers according to the biomass in river stretches. Currently, this is a Regional classification, however, from next year all fisheries in England & Wales will be surveyed according to a National Fisheries Classification Scheme as a matter for policy. There are no specific biomass targets for freshwater fish populations in our rivers, however, we do endeavour to ensure that individual rivers hold the maximum sustainable stock that can be achieved according to habitat, water quality and other environmental factors.

We do have specific duties under the EC Freshwater Fisheries Directive (1978). This includes adopting the principal of safeguarding freshwater fisheries and the waters they inhabit. Water Quality objectives are set for designated river stretches to enable fish to live and breed successfully (see Water Quality 6.5).

#### 6.6.4 Status

The plan area was last surveyed during 1993/94. The biomass and density data for each individual watercourse are listed in the table below:

**Table 17. Biomass and Density Data**

Watercourse	Biomass (g/m <sup>2</sup> )	Density (No/m <sup>2</sup> )
Delph	14.96	0.430
Counterdrain	15.73	0.345
Forty Foot	20.60	0.594
Sixteen Foot	14.35	0.229
Middle Level Main Drain*	13.90	0.303
Pophams Eau*	20.41	0.724
Well Creek	21.31	0.545
Old Nene	21.98	0.368
Twenty Foot River	34.33	0.496
Whittlesey Dyke	19.57	0.605
Kings Dyke	21.91	1.146
Bevills Leam and Yaxley Lode	13.71	0.348
Monks Lode and Great Raveley Drain	14.68	0.467

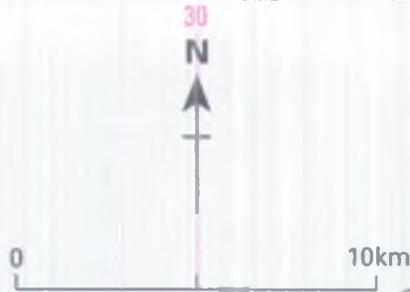
\* *The two waters asterisked could not be surveyed in 1994 due to adverse river conditions which resulted in poor sampling efficiencies. As a result the figures are from the previous survey (1991). The biomass categories for each watercourse are plotted on Map 24.*

All the rivers had a class 'B' biomass ranking or better, which defines them as good to excellent. Roach are the dominant species and fast growing, it was noted that very few older year class fish were encountered whilst surveying. There were common bream present in most waters, shoals of these large fish were caught on the Twenty Foot River and Well Creek. Specimen predators, pike and zander, are found throughout the catchment as were perch which were caught at most sites. The best population of tench were seen in the Whittlesey Dyke.

Old Bedford  
Local Environment Agency  
Plan  
Map 24



ENVIRONMENT AGENCY



**Fisheries Classification (Biomass) 1993-94**

**KEY**

- Area Boundary
- Main River
- Middle Level Commissioners Main Drains
- A >20g/m<sup>2</sup>
- B 10-20
- C 5-10
- D <5
- - - - - Dashed Lines 1991 Data

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The Counterdrain and River Delph can be considered separate to the Middle Level System. These waters support good populations of cyprinids and predators both of which are targeted by angler groups. The last survey of the Delph in 1993 found 19 different species; of particular note is the presence of spined loach in the Counterdrain which resulted in the designation of the reach as a candidate SAC. The Agency and EN are currently funding research into this species in order to accurately map its distribution within the candidate site area and also to make recommendations for future water management procedures. The localised distribution of the spined loach is also recognised in the Biodiversity Plan for East Anglia.

The Counterdrain does become very weedy during the late summer, and together with water usage lowering the levels, angling can become quite difficult. However, guidelines have been agreed with EN for annual weed cutting and removal procedures.

The Hundred Foot River is not routinely sampled, the tidal flow makes an accurate quantitative netting assessment impossible. However, during 1993 the fishery status was investigated between Mepal and Welmore lake sluice. 16 species were recorded, with roach the most prevalent. It was interesting to note that chub and dace, were present in the population, whereas they were absent in most of the static waters considered in the rest of the catchment. Also present were smelt and flounder which need access to an estuarine habitat.

It is suggested that excessive weed growth during the summer months is a contributory factor in the reduced intensity of fishing in the Middle Level System, certainly a heavy loading of duckweed or blanketweed makes angling near impossible.

Problems in the fishery can also be highlighted by four recent fish kills of note in the area. In 1994 on the Old Nene 14,000 fish were lost at March due to pollution from a storm water overflow, a further 6,000 fish were killed due to what was thought to be a combination of excessive duckweed and low dissolved oxygen levels. On the Counterdrain downstream of Welney Sluice approximately 32,000 fish were lost in August 1995, over 2km of river was deoxygenated due a cumulation of factors; low flows, high temperatures and weed clearance activities. In each case re-stocking took place and the incidents were investigated to try and avoid a repeat.

An earlier mortality on the Delph at Welney Bridge in 1992 killed around 1000 fish, the reason was found to be deoxygenated water running off the Washes following summer flooding. This problem is being addressed by the Ouse Washes Management strategy.

The area does not support a sustainable salmonid fishery. It is not believed there are any anglers who regularly target these species whilst fishing. However, the occasional sea trout may be encountered during its passage through the Hundred Foot River.

### 6.6.5 Trends

When Middle Level fish dynamics were reviewed in 1994, we critically assessed the results of the previous four routine surveys over the preceding 10 year period. Examining a single watercourse in isolation, the biomass and density estimates vary considerably with time.

However, when the whole system is looked at there is remarkable stability; a mean biomass in 1994 of 21g/m<sup>2</sup> represents a class 'A' fishery. Whilst the dominant species is roach (with a consistent biomass of 8.7g/m<sup>2</sup>), common bream estimates varied the most due to the sampling difficulties associated with this tightly shoaling species. The proportion of predators (pike and zander) in the population was stable and the minor fluctuations observed correlated well with the main prey (roach) density.

Pooling the roach year class data indicates a strong skewing toward younger fish, ageing data reveals a between-year survival rate of only 0.292. This is significantly lower than our Regional average and will probably lead to future roach stocks continuing to be dominated by 2 and 3 year olds, with few fish greater than 5 years old.

The Middle Level System therefore, despite its apparent homogeneity of habitat, at any given time may show considerable spatial variation of population estimates between sites and adjacent watercourses. There is strong evidence to suggest that the major cyprinid species undertake migrations between waters due to relatively few obstructions. The temporal variations that also exist are explained in part through this phenomena.

It was suggested that the fish stocks are at their optimal level given habitat and food availability. The main food source for the cyprinid population were considered to be chironomid larvae found in the silt. The lack of macrophyte cover was also noted. Improved habitat or assessing the historic management practices may result an increased biomass or survival in the system.

<b>Issue 21: Investigate the Poor Survival of Fish Stocks</b>
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### 6.6.6 Comments on the Quality And Availability of Data

Fisheries information has been collected for nearly 20 years on the area's rivers. This represents a very important data set from which changes in the fish populations over time can be assessed. Although our routine surveys are changing in frequency from three to five years, the quality and usefulness of the data should not be affected.

Fisheries data is used to predict the effects of Agency operations on watercourses. It is also made available to interested external parties.

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**BIODIVERSITY AND NATURE CONSERVATION****6.6.7 General**

The U.K government and the Agency are committed to sustainability and biodiversity. The Prime Minister originally signed up to Biodiversity at the Earth Summit in Rio de Janeiro (1992) and the government and the Agency's commitment to sustainability and biodiversity will be directed through the implementation of the UK Biodiversity Action Plan. At a local level biodiversity will be given consideration in all relevant activities through input into Local Biodiversity Action Plans. These will be prepared by a number of bodies such as wildlife Trusts, EN, RSPB, Local Authorities and the Agency. These local plans will take account of national and local priorities and will reflect the values of local people and conditions with the aim of conserving and enhancing biological diversity within the UK. Action for Wildlife in East Anglia (1996) has been produced as a guide to biodiversity planning in the area.

**6.6.8 Monitoring**

We undertake River Corridor Surveys on Main River and other surveys of selected species.

**6.6.9 Objectives**

Since then the UK steering group launched its national Action Plan (1994), and a report was published (1995) which listed plans (including national targets) for 116 species and 14 habitats, a further 286 species and 24 habitats have also been highlighted.

This process to date has been endorsed by Government, the next phase being to bring the Biodiversity concept to the local level.

**6.6.10 Status**

'Action for wildlife in East Anglian' (1996) is a guide to biodiversity planning which has been prepared by a number of bodies; Wildlife Trusts, EN, RSPB, local authorities and the Agency. This sets the context for the future production of local county-based action plans; each will have different priorities reflecting the local values and conditions that impinge on key species and habitats.

**Old Bedford  
Local Environment Agency  
Plan  
Map 25a**



ENVIRONMENT AGENCY



0 10km

00  
TL

TF  
00  
TL

90

90

80

20

30

40

50

60

Peterborough

March

Ramsey

Chatteris

Earith

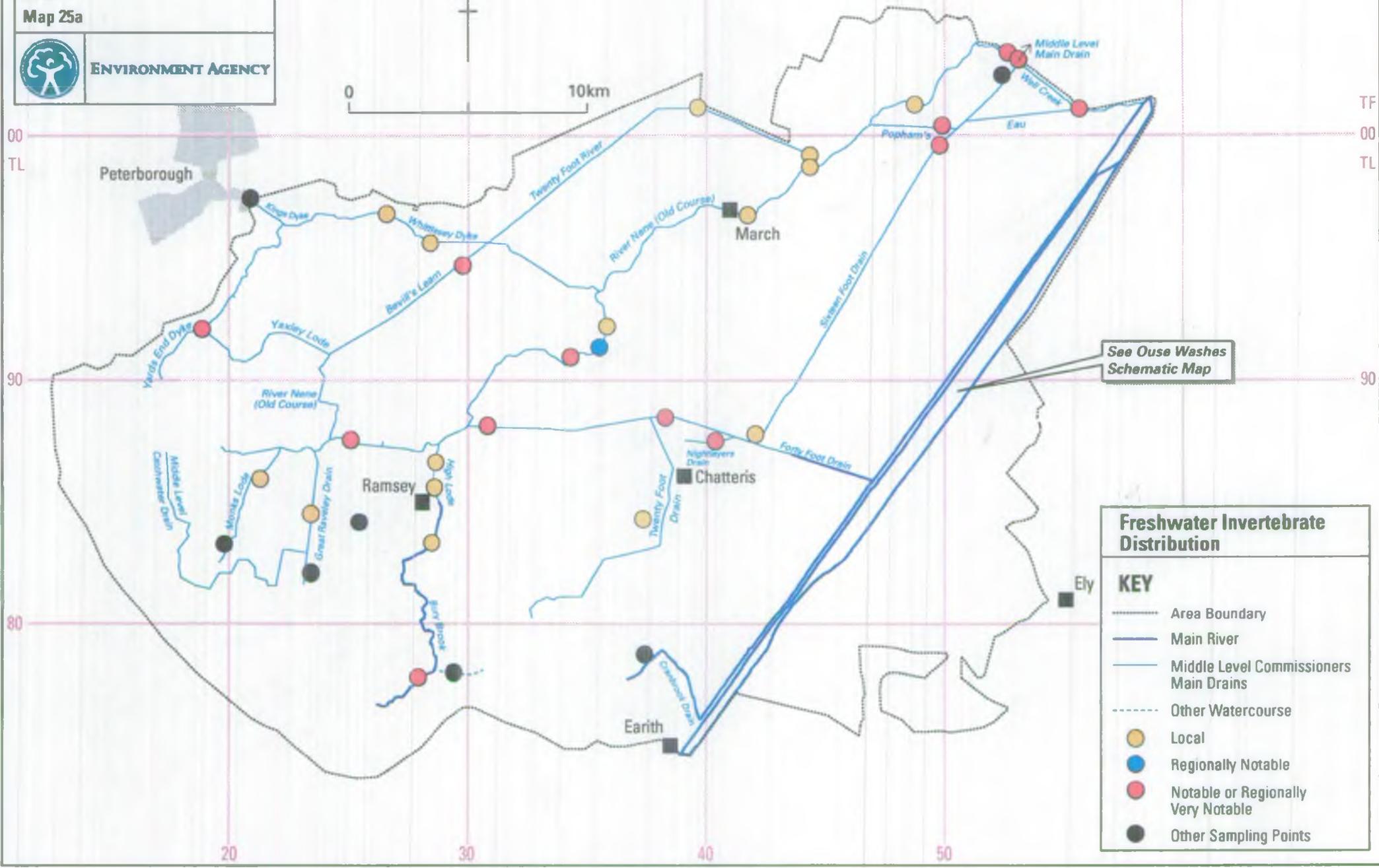
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See Ouse Washes  
Schematic Map

**Freshwater Invertebrate  
Distribution**

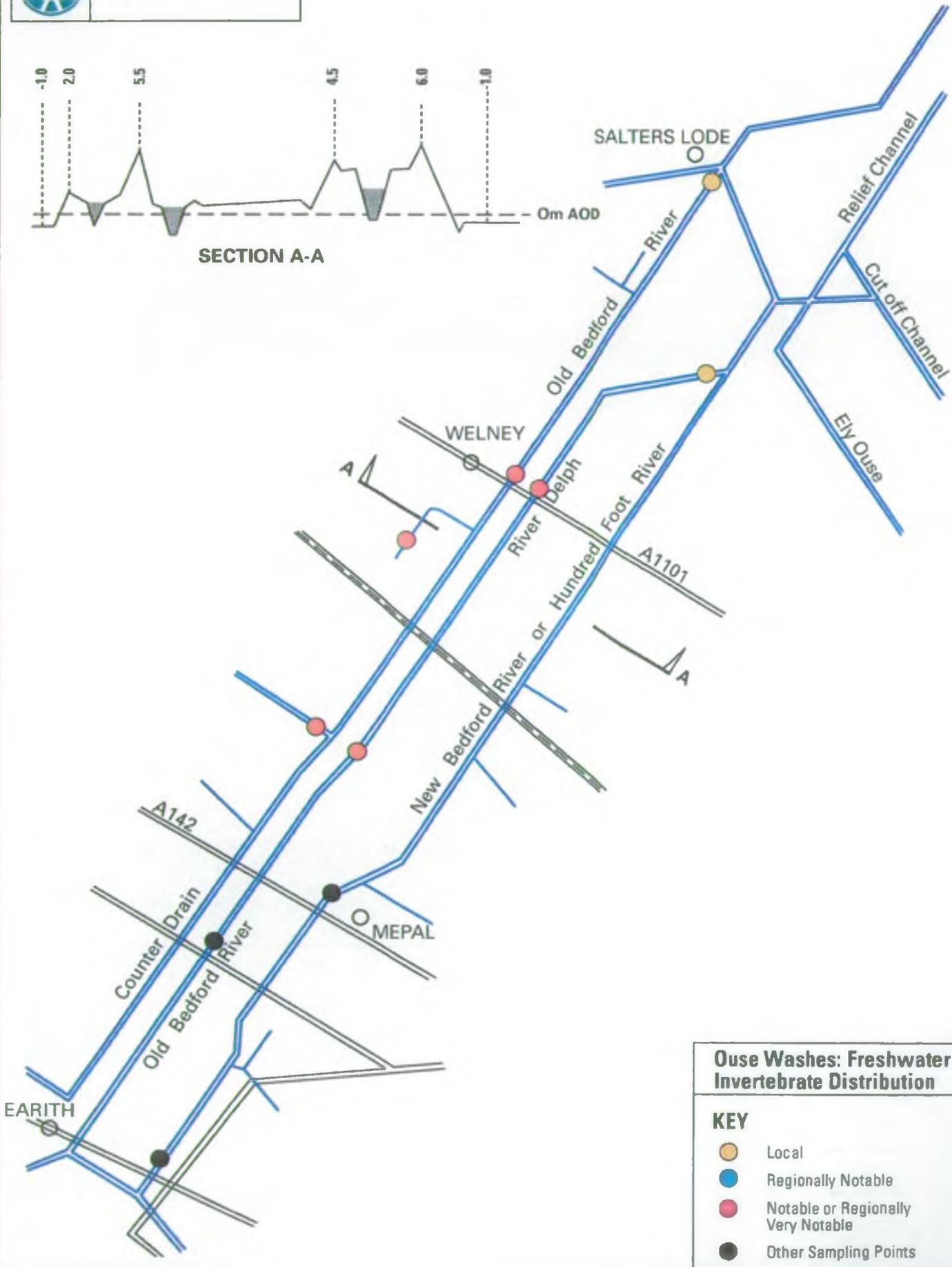
**KEY**

- Area Boundary
- Main River
- Middle Level Commissioners Main Drains
- Other Watercourse
- Local
- Regionally Notable
- Notable or Regionally Very Notable
- Other Sampling Points





ENVIRONMENT AGENCY



**Ouse Washes: Freshwater Invertebrate Distribution**

**KEY**

- Local
- Regionally Notable
- Notable or Regionally Very Notable
- Other Sampling Points

---

There are 44 of the UK's priority species within East Anglia. Noteworthy species within the Old Bedford area are the Bewick's swan and Whooper swan with overwintering populations concentrated at two washland sites. As previously mentioned, the spined loach which is found in the Counterdrain has led to an application for this SSSI site to be additionally designated as a SAC. Otters have been re-introduced and are known to be present in the Washes from monitoring spraint deposits on the river banks under bridges. Another important species in terms of regional biodiversity is the native white-claw crayfish. There is little evidence of significant numbers in these watercourses. A recent discovery resulting from algae removal maintenance work is the presence of the relatively rare depressed river mussel in the Old Bedford River.

The Ouse Washes see large numbers of migrating teal, gadwall, pintail and tufted ducks. Other nationally rare breeding species present include the hobby and spotted crake.

Over 300 species of higher plants have been recorded on the Washes, including two nationally protected species; the ribboned water-plantain and least lettuce. It is thought that the Washes network of rivers, ditches and ponds hold a rich array of invertebrate life.

Invertebrate sampling is undertaken throughout the watercourses of 'Old Bedford' area. Maps 25a and b show the sites where species of local or rarer conservation interest were recorded (1995/96). The rarer invertebrate species found in the area were mainly beetles and bugs, reflecting the wide, deep, slow moving nature of the rivers. Mayfly, cased caddis, snail and flatworm species were also found. One of the more interesting areas is in the Counterdrain and its adjoining drains, the Manea Fifties and the Forty Foot.

The classifications used are as follows:

*Notable/Regionally very notable* : species that are not classified as Red Data Book species but are scarce in Great Britain - 11 different invertebrate species in total were found at one or more sample sites in the area.

*Regionally notable* : species too common nationally to be notable, but uncommon in some parts of the country - 1 species found in this area.

*Local* : species not uncommon enough to fall within the above categories, but of some interest - 12 species found in this area.

At present the Wildlife Trust for Cambridgeshire are updating County Wildlife Site information. Phase 1 surveys of land use have been undertaken throughout Cambridgeshire, except for the Fens. In some areas Phase 2 surveys have been undertaken (these surveys provide the species details required for designations), but due to lack of funding are not yet complete.

---

In terms of broad habitats; fens, floodplain grazing marsh, reedbeds and cereal field margins are all important features of the local landscape and should be conserved and where applicable enhanced.

#### **Issue 9: Scope for Habitat Protection & Development**

As part of the Ouse Washes Management Strategy, a number of specific issues were investigated, in each case options were considered for the future management of the washland. (i) Grasslands; solutions are being sought which maintain the balance between agricultural needs, of a highly productive area (grazing and hay making) with the conservation uses. (ii) Woody Vegetation; there are six different woodland types, the objective is to maintain and enhance the diversity through restoring hawthorn hedges by coppicing, white/crack willow pollarding and active management of osier beds. Removal of scrub and cricket bat willow/popular plantations is recommended. (iii) Pest control; five species were identified and their associated problems- moles and rabbits (threaten flood banks), Foxes (also damage banks and predate birds), mink and crows (predate birds). Active control of all species is recommended.

Overall the Ouse Washes Management strategy objectives are to maintain the traditional regime of winter flooding, moist spring soil conditions and drier in summer. Thus maximising the site's value as a flood storage reservoir, a key wildlife habitat, an agricultural resource and a recreation amenity.

##### **6.6.11 Trends**

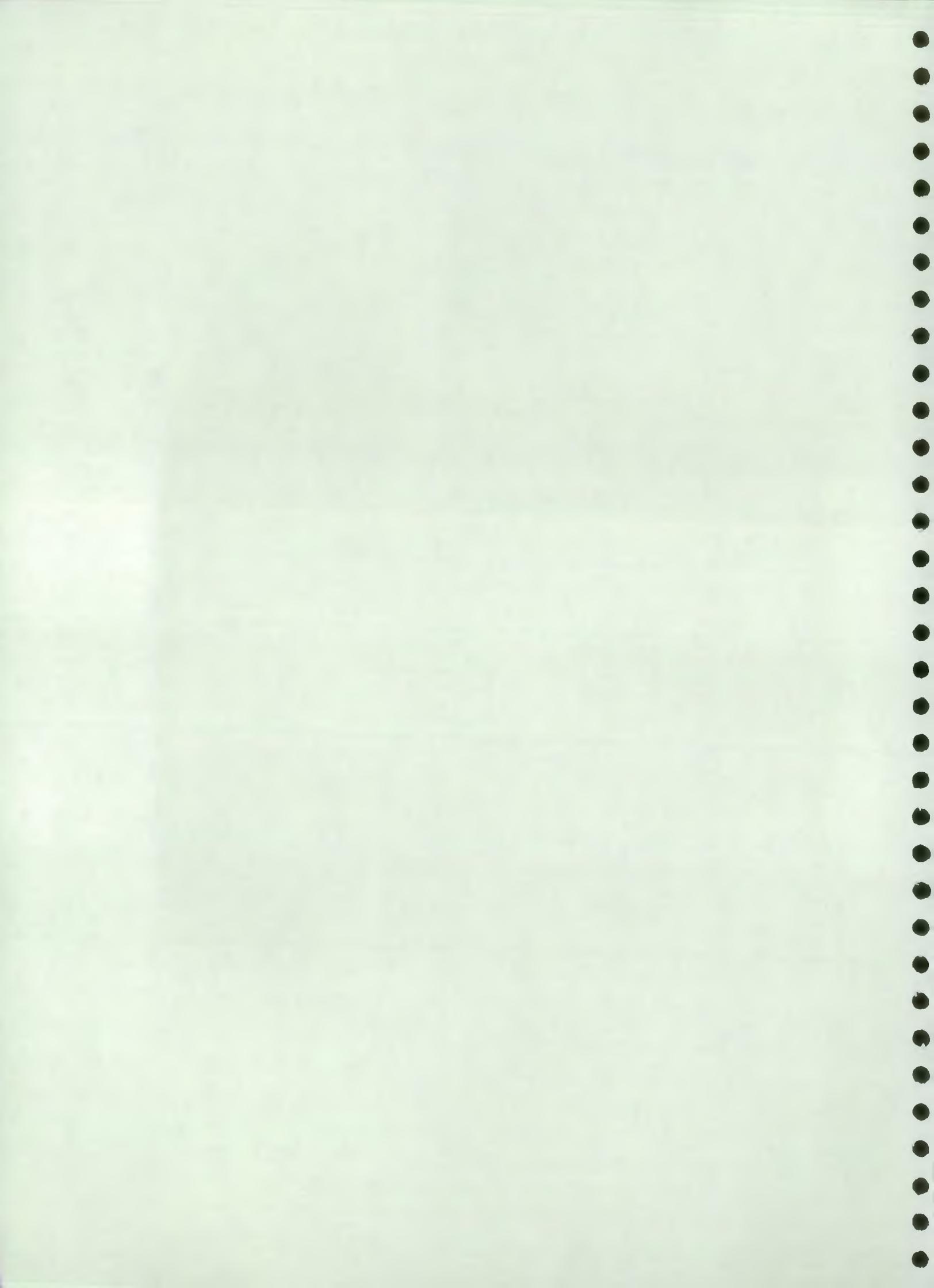
We cannot yet provide quantitative data in order to determine whether the species or habitat diversity is getting better or worse. The Agency together with collaborative partners will ensure that the wildlife within the 'Old Bedford' area continues to be monitored with steps being taken to stop any future degradation.

##### **6.6.12 Comments on the quality and availability of data**

With the exception of the intensely studied Ouse Washes, the remainder of the watercourses in this area have not been routinely monitored. There is, therefore, a lack of good conservation information regarding the range and number of species present.

#### **Issue 22: Lack of Biodiversity Data**

**SECTION SEVEN - NEXT STEPS AND APPENDICES**



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**SECTION SEVEN - NEXT STEPS****7.0 Next Steps**

This document has been produced through internal discussion and informal liaison with external bodies principally at the meeting convened at the Arthur Rickwood Centre, Mepal on 5 February 1997. The purpose of this report is to consult formally with organisations, groups and individuals interested in the future of the local environment. Consultation will enable the Agency to:

- clarify the extent and distribution of current uses of the local environment;
- expose local issues to a wide audience and establish if there are any additional issues that need to be considered;
- ensure decisions on the future management of the locality are based on accurate information and the fullest possible range of views from interested parties.

**Therefore, the most important element of this process is for the Agency to gain feedback on the issues themselves and options for management which can be fed into the next stage of the process, the Action Plan.**

Consultation will begin with the following activities:

- press releases to advertise the plan;
- distribution of the Plan to key partners and consultees; and,
- display of leaflets and posters at local authority offices and libraries.

Consultees will be able to respond over the next three months (until **25 August 1998**) in writing to:

*The Customer Services Manager  
Old Bedford LEAP  
Environment Agency  
Anglian Region (Central Area)  
Bromholme Lane  
Brampton  
Huntingdon  
Cambs PE18 8NE*

At the close of the consultation period, the responses are considered in detail before the Action Plan is produced (due February 1998). We will also prepare a Statement of Consultation Responses Report which will be available to all those who responded and details the Agency's reply to these comments.

In collaboration with the jointly responsible organisations, the Agency will aim to pursue and implement the activities outlined in the Action Plan. It is our intention that the plan should influence the policies and actions of Planning Authorities and Developers, as well as assisting the day to day management of the local environment.

An annual review will be undertaken to monitor progress in implementing the Action Plan - which has a 'shelf-life' of five years. After this time the LEAP process will be repeated.

**The information and views you provide are, therefore, a very important step in the overall process. It is hoped that you will respond positively to this initiative so that a shared vision for the 'Old Bedford' Area can be developed and realised.**

**APPENDIX A**

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## APPENDIX B

## GLOSSARY

<b>Abstraction</b>	<i>The removal of water from any source, either permanently or temporarily.</i>
<b>Abstraction Licence</b>	<i>A statutory document issued by the Agency to permit removal of water from a source of supply. It can limit the quantity of water taken daily, etc.</i>
<b>Agenda 21</b>	<i>A comprehensive programme of worldwide action to achieve a more sustainable pattern of development for the next century. UK Government adopted the declaration at the UN Conference on Environment and Development (the Earth Summit) held in Rio de Janeiro in 1992.</i>
<b>Algal blooms</b>	<i>Rapid growth of phytoplankton in marine and fresh-waters which may colour the water and may accumulate on the surface as a green scum. Decomposing dead cells consume large quantities of oxygen in the water which may result in the waters becoming anaerobic. Some blooms (such as certain species of blue-green algae) may produce poisons.</i>
<b>Alluvial</b>	<i>Sedimentary deposits resulting from the action of rivers. Typically fine grained material carried by the river and deposited in areas such as flood plains.</i>
<b>Ammonia</b>	<i>A chemical compound found in water often as a result of pollution by sewage effluents. It is widely used to determine water quality. Ammonia detrimentally affects fish.</i>
<b>AOD (Above Ordnance Datum)</b>	<i>Land levels are measured relative to the average sea level at Newlyn in Cornwall. This average level is referred to as 'Ordnance Datum'. Contours on Ordnance Survey maps of the UK show heights in metres above Ordnance Datum.</i>
<b>Aquifer</b>	<i>A water bearing stratum situated below ground level. The water contained in aquifers is known as groundwater.</i>
<b>BOD (Biochemical Oxygen Demand)</b>	<i>A standard test which measures over 5 days the amount of oxygen taken up by aerobic bacteria to oxidise organic (and some inorganic) matter.</i>
<b>Biodiversity</b>	<i>Diversity of biological life, the number of species present.</i>
<b>Biomass</b>	<i>Total quantity or weight of organisms in a given area or volume - eg. fish biomass is measured as grammes per square metre (gm<sup>2</sup>).</i>
<b>Borehole</b>	<i>Well sunk into a water bearing rock.</i>
<b>Boulder Clay</b>	<i>Residue deposited by glaciers as they retracted at the end of the ice ages. It consists of a mixture of rock fragments, clay, sand and gravels.</i>
<b>Brunåtland Report</b>	<i>Report of the 1987 World Commission on Environment and Development.</i>
<b>Catchment</b>	<i>The total area from which a single river system collects surface run-off.</i>
<b>Coarse Fish</b>	<i>Freshwater fish other than salmon and trout.</i>
<b>Combined Sewer Overflow (CSO)</b>	<i>An overflow structure which permits a discharge from the sewerage system during wet weather conditions, and consists of both foul and surface water discharge.</i>
<b>Consent (Discharge)</b>	<i>A statutory document issued by the Agency. It can authorise entry and indicate any limits and conditions on the discharge of an effluent to a Controlled Water. A land drainage consent is an approval for specified structural works in areas under Agency control.</i>
<b>Controlled Waste</b>	<i>Industrial, household and commercial waste, as defined in UK legislation. Controlled waste specifically excludes mine and quarry waste, wastes from premises used for agriculture, some sewage sludge and radioactive waste.</i>
<b>Controlled Waters</b>	<i>All rivers, canals, lakes, groundwaters, estuaries and coastal waters to three nautical miles from the shore, including the bed and channel which may for the time being be dry.</i>
<b>Countryside Stewardship Scheme</b>	<i>Scheme set up by Countryside Commission in which land-owners are grant aided to manage their land in an environmentally sensitive manner.</i>
<b>Cumecs</b>	<i>Cubic Metres per Second: equivalent to 86.4 thousand cubic metres per day.</i>
<b>Cyprinid fish</b>	<i>Coarse fish, eg. Roach, Dace and Bream.</i>
<b>Discharge capacity</b>	<i>The volume of water per unit of time able to be conveyed by a channel or pipe.</i>

<b>Dissolved Oxygen (DO)</b>	<i>The amount of oxygen dissolved in water. Oxygen is vital for life so this measurement is an important, but highly variable, indicator of the 'health' of the water. It is used to classify waters.</i>
<b>District Local Plans</b>	<i>Statutory documents produced by District or Borough Councils to implement the development strategy set out in County Structure Plans. Specific land use allocations are identified.</i>
<b>Drift</b>	<i>Transported superficial deposits, especially those transported by ice.</i>
<b>Dry Weather Flow (Sewage Treatment Works)</b>	<i>For sewage works, this is calculated by adding estimates of the domestic sewage discharge (which is the population multiplied by the per capita consumption) plus any industrial discharges plus infiltration into the sewer.</i>
<b>Dry Weather flow (River)</b>	<i>For the river, the Dry Weather Flow is taken to be what is known as the 95 percentile low flow (or Q95) which means the river is higher than Q95 for 95 percent of the time.</i>
<b>EU Directive</b>	<i>A type of legislation issued by the European Union which is binding on Member States in terms of the results to be achieved but which leaves to Member States the choice of methods.</i>
<b>EC Regulation</b>	<i>European Community legislation having legal force in all member states.</i>
<b>Ecosystem</b>	<i>A functioning, interacting system composed of one or more living organisms and their effective environment, in biological, chemical and physical sense.</i>
<b>Effluent</b>	<i>Liquid waste from Industry, agriculture or sewage treatment plants.</i>
<b>Emergency Overflow</b>	<i>Discharge of crude sewage from sewerage system because of mechanical or electrical breakdown of pumps.</i>
<b>Environmental Indicator</b>	<i>A measure which can be used to assess the present state of the environment by looking at trends over time.</i>
<b>Environmental Quality Standard (EQS)</b>	<i>The concentration of a substance which must not be exceeded if a specific use of the aquatic environment is to be maintained.</i>
<b>Environmentally Sensitive Area</b>	<i>An area where traditional farming methods may be supported by grant aid from the Ministry of Agriculture, Fisheries and Food (MAFF) to support distinctive landscape, wildlife habitats or historic features.</i>
<b>Eutrophic</b>	<i>A description of water which is rich in nutrients. At worst, such waters are sometimes beset with unsightly growths of algae.</i>
<b>Fish Biomass</b>	<i>A measure of the quality of a fishery as found in terms of surveys, weight by area ie g/m<sup>2</sup>.</i>
<b>Floodplain</b>	<i>This includes all land adjacent to a watercourse over which water flows or would flow but for flood defences in times of flood.</i>
<b>Fluvial</b>	<i>Relating to the freshwater river.</i>
<b>Gauging Station</b>	<i>A site where the flow of a river is measured.</i>
<b>General Quality Assessment (GQA)</b>	<i>A new scheme replacing the National Water Council Classification system. It provides a means of assessing and reporting environmental water quality in a nationally consistent and objective way. The chemical grades for rivers introduced in 1994 uses BOD, Ammonia and Dissolved Oxygen limits for water quality between A (Very Good) and F (Bad). Other grades for estuarine and coastal waters are being developed and aesthetic components will be measured and graded by a system under trial now.</i>
<b>Global Warming</b>	<i>The increase in the average temperature of the earth, thought to be caused by the build up of greenhouse gases.</i>
<b>Habitat</b>	<i>The customary and characteristic dwelling place of a species or community.</i>
<b>Hydrogeology</b>	<i>Branch of geology concerned with water within the Earth's crust.</i>
<b>Hydrology</b>	<i>The study of water on and below the earth's surface.</i>
<b>In river needs</b>	<i>The totality of requirements for the water environment and effluent dilution before abstraction is taken into account.</i>

<b>Integrated Pollution Control (IPC)</b>	<i>An approach to pollution control in the UK which recognises the need to look at the environment as a whole, so that solutions to particular pollution problems take account of potential effects upon all environmental media.</i>
<b>Internal Drainage Boards (IDBs)</b>	<i>Authorities responsible for dealing with land drainage within a district. They are primarily concerned with agricultural land drainage but also may be involved with water supply to their district for agricultural purposes.</i>
<b>Invertebrate</b>	<i>Animals without backbones, eg, leeches, snails worms, insects.</i>
<b>Leachate</b>	<i>Liquor formed by the act of leaching.</i>
<b>Macrophytes</b>	<i>Any plant observed by the naked eye and nearly always identifiable. This definition includes all higher aquatic plants, vascular cryptograms and bryophytes, together with groups of algae which can be seen to be composed predominantly of a single species.</i>
<b>Main River</b>	<i>The watercourse shown on the statutory 'Main River Maps' held by the Agency and MAFF. The Agency has permissive powers to carry out works of maintenance and improvement on these rivers.</i>
<b>mAOD</b>	<i>A measure of altitude. Metres above ordnance datum.</i>
<b>Nutrient</b>	<i>Substance providing nourishment for plants and animals, eg, nitrogen, phosphorus.</i>
<b>OFWAT</b>	<i>Office of Water Industry's Financial Regulator of Water Service Companies.</i>
<b>Permissive Powers</b>	<i>Powers which confer on the Agency the right to do things but not the duty</i>
<b>Pesticides</b>	<i>Substances used to kill pests, weeds, insects, fungi, rodents, etc.</i>
<b>Potable Water</b>	<i>Water of a suitable quality for drinking.</i>
<b>PPG23</b>	<i>Planning Policy Guidance 23: Planning and Pollution Control. Notes which set out the Government's policies towards planning and pollution control which must be taken into account by Planning Authorities.</i>
<b>Prescribed Process</b>	<i>Under IPC, processes described in regulations, that are the most potentially polluting or technologically complex industrial and other.</i>
<b>Prescribed Substance</b>	<i>Under IPC, a potentially polluting or harmful substance discharges which should be prevented, minimised or rendered harmless.</i>
<b>Public Water Supply</b>	<i>The supply of water by companies appointed as Water Undertakers by the Secretary of State for the Environment under the Water Industry Act 1991.</i>
<b>Q95</b>	<i>The flow of a river which is exceeded on average for 95% of the time.</i>
<b>Ramsar</b>	<i>Wetland site of International Importance that is designated under the Ramsar* convention (*a town in Iran where the international convention originally agreed in 1975 to stem the progressive encroachment on, and loss of, wetland).</i>
<b>Raw Water</b>	<i>Water in its natural state: before treatment.</i>
<b>Red Data Book Species</b>	<i>The most threatened species in Great Britain.</i>
<b>Return Period</b>	<i>Refers to the frequency of a rainfall or flooding event. Flood events are described in terms of the frequency at which, on average, a certain severity of flow is exceeded. This frequency is usually expressed as a return period in years, eg, 1 in 50 years.</i>
<b>Riparian (Owner)</b>	<i>Owner of river bank and/or land adjacent to a river. Normally owns river bed and rights to mid-line of channel.</i>
<b>River Corridor</b>	<i>The continuous area of river, river banks and immediately adjacent land alongside a river and its tributaries.</i>
<b>River Flow Objectives (RFO)</b>	<i>A series of flows which aim to reflect the varying in river needs and the seasonality of flow patterns.</i>

<b>River Needs Consents (RNC)</b>	<i>Permissions for discharge of effluents, that often specify limits for certain potential pollutants and ensure that the discharge does not derogate any of the uses of the controlled water.</i>
<b>River Quality Objectives (RQO)</b>	<i>The level of water quality that a river should achieve, in order to be suitable for its agreed use. Is being replaced by Water Quality Objectives (WQOs).</i>
<b>Scheduled Ancient Monument (SAM)</b>	<i>The key sites nationally for archaeology, designated by the Secretary of State for National Heritage, through English Heritage.</i>
<b>Septic tank</b>	<i>A tank used for the treatment of sewage from properties without mains drainage. The sewage is settled and some bacterial treatment occurs. Discharge of effluent is usually to a soakaway system.</i>
<b>Set-Aside</b>	<i>The EC set-aside scheme was first introduced for the crop year 1991/92 as part of the Common Agricultural Policy reform to allow farmers to remove land from production by receiving compensation. Eligible crops are a wide range of arable crops, principally cereals.</i>
<b>Sewage</b>	<i>Liquid waste from cities, towns and villages which is normally collected and conveyed in sewers for treatment and/or discharge to the environment.</i>
<b>Sewerage</b>	<i>System of sewers usually used to transport sewage to a sewage treatment works.</i>
<b>Silage</b>	<i>A winter feed for cattle. Silage is produced throughout the summer by bacterial action on freshly cut grass or other crops stored in silos.</i>
<b>Siltation</b>	<i>At low velocities water will deposit the material being carried in suspension. The slower the velocity the finer the material deposited. A deposit of clays and silt is very difficult to remove naturally as it requires turbulent and high velocities.</i>
<b>Site of Special Scientific Interest (SSSI)</b>	<i>A site given a statutory designation by English Nature because it is particularly important, on account of its nature conservation value.</i>
<b>Sludge</b>	<i>The accumulation of solids from treatment processes. Sludge can be incinerated or spread on farm land.</i>
<b>Slurry</b>	<i>Animal waste in liquid form.</i>
<b>Soakaway</b>	<i>System for allowing water or effluent to soak into ground, commonly used in conjunction with septic tanks.</i>
<b>Special Protection Area (SPA)</b>	<i>Statutory protected habitats for wild birds under EC Regulations.</i>
<b>Spray Irrigation</b>	<i>The watering of crops by spraying which can have a high impact on water resources.</i>
<b>Statutory Consultee</b>	<i>In both the Agency's and other agencies' legislation there are requirements for consultation. Comments and objections which are received are noted but do not usually have the power to, in themselves, prevent the controlling authority from making a decision.</i>
<b>Statutory Water Quality Objectives</b>	<i>Methods of classifying waters and targets for individual waters that have been given (SWQO) statutory force through the issue of Regulations by the Secretary of State under the Water Resources Act 1991.</i>
<b>Strata</b>	<i>A term applied to rocks that form layers or beds. Can also be applied to successive layers of any deposited substance, eg, atmosphere, biological tissue.</i>
<b>Structure Plans</b>	<i>Statutory documents produced by County Councils outlining their strategy for development over a 10-15 year timescale.</i>
<b>Surface Water</b>	<i>Water collecting on and running off the surface of the ground.</i>
<b>Suspended Solids</b>	<i>The density of undissolved matter which is held by a water body. It will vary with the turbulence and velocity of the water.</i>
<b>Sustainable Development</b>	<i>Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.</i>
<b>SI05 Surveys</b>	<i>Section 105 of the Water Resources Act 1991 allows for Standards of Service, Assets and Flood Risk Surveys.</i>

<b>Telemetry</b>	<i>A means of directly collecting data from remote sites.</i>
<b>Watercourse</b>	<i>A stream, river, canal or channel along which water flows.</i>
<b>Water Quality Objectives (WQO)</b>	<i>Water quality targets to secure specific formal minimum quality standards for specific stretches of water by given dates. A new component of these is introduced by 'The Surface Waters (River Ecosystem Classification) Regulations 1994'; a classification scheme to be applied by Agency to the rivers and watercourses of England and Wales. Other existing standards operate already to give effect to various EC Directives for water quality.</i>
<b>Water Resource</b>	<i>The naturally replenished flow or recharge of water in rivers or aquifers.</i>
<b>Water Table</b>	<i>Top surface of the saturated zone within the aquifer.</i>
<b>Wetland</b>	<i>An area of low lying land where the water table is at or near the surface for most of the time, leading to characteristic habitats.</i>
<b>Winter Storage Reservoir</b>	<i>Reservoirs built by farmers to store water during the winter months when it is 'plentiful' for re-use during the summer.</i>
<b>1:10 Year Drought/Flood</b>	<i>A drought/flood event with a statistical probability of occurring once in a ten year period (other periods may be specified in a similar way).</i>
<b>95%ile Limit</b>	<i>A numerical limit, specified in a discharge consent, which must be achieved or bettered for at least 95% of a specified time period.</i>

ABBREVIATIONS - ACRONYMS

AC	....	Angling Club
AS	....	Angling Society
AOD	....	Above Ordnance Datum
AWS	....	Anglian Water Services
BATNEEC	....	Best Available Techniques Not Entailing Excessive Costs
BC	....	Borough Council
BOD	....	Biochemical Oxygen Demand
BPEO	....	Best Practicable Environmental Option
CC	....	County Council
CMP	....	Catchment Management Plans
CoCo	....	Countryside Commission
COPA	....	Control of Pollution Act 1974
CSO	....	Combined Sewer Outfall
DC	....	District Council
DO	....	Dissolved Oxygen
DaE	....	Department of the Environment
DWF	....	Dry Weather Flow
EPA190	....	Environmental Protection Act 1990
EN	....	English Nature
gm <sup>2</sup>	....	Grams per square metre (a unit of biomass)
GQA	....	General Quality Assessment
ha	....	Hectare
IDB	....	Internal Drainage Board
IPC	....	Integrated Pollution Control
km	....	Kilometre
km <sup>2</sup>	....	Square Kilometre
LPA	....	Local Planning Authority
m	....	Metre
m <sup>3</sup>	....	Cubic metre
m <sup>3</sup> /day	....	Cubic metres per day
m <sup>3</sup> /s	....	Cumec: cubic metre per second
mg/l	....	Milligrams per litre
MAFF	....	The Ministry of Agriculture, Fisheries and Food
MLC	....	Middle Level Commissioners
M/d	....	Mega litres per day (flow rate of millions of litres per day)
mm	....	Millimetre
µg/l	....	Microgrammes per litre
NGR	....	Notional Grid Reference
OD	....	Ordnance Datum - Newlyn - the datum for all land level survey on Britain
OFWAT	....	Office of Water Services
PWS	....	Public Water Supply
R&D	....	Research and Development
RAS	....	Radioactive Substances
REC	....	River Ecosystem Class, REC1, REC2, etc.
RQO	....	River Quality Objective
RNC	....	River Needs Consent
RSPB	....	Royal Society for the Protection of Birds
SAC	....	Special Areas of Conservation (c, candidate)
SAM	....	Scheduled Ancient Monument
SoS	....	Standards of Service
SPA	....	Special Protection Area
SS	....	Suspended Solids
SSSI	....	Site of Special Scientific Interest
STW	....	Sewage Treatment Works
UWWTD	....	Urban Wastewater Treatment Directive
%	....	Percent

**APPENDIX C**

**WASTE MANAGEMENT**

**Basis of Waste Generation Estimates**

Agricultural and Mining/Quarry wastes are not controlled wastes but are quoted here for completeness in order to give a picture of the estimated quantities which are believed to arise in the area.

The Agricultural Waste estimate from arable practices is based on the arable land use and is an estimate of the straw removed from land in the production of cereals. The area has 35,890ha of cereal cropping of which the average straw yield based on wheat and barley is 4.4 tonnes per ha of which 50% is removed from the land (the remainder being ploughed in) = 142,239 tonnes per year. The quantities of general agricultural wastes arising cannot be estimated due to a lack of existing data. Most non natural wastes from agriculture will enter the normal routes for waste disposal in the area and therefore be included in the disposal figures for industrial and commercial wastes.

Since animal husbandry data are not recorded on a plan area basis by MAFF, an estimate of the Animal Wastes produced in the area can only be obtained by assuming that the figures for the County of Cambridgeshire can be applied to the area (which assumes a similar density and husbandry type). An area of 921km<sup>2</sup> gives an estimated 298,873 tonnes of animal wastes based on figures quoted in the Cambridgeshire Waste Management Plan 1995-2005. The majority of these wastes are returned to the land through normal agricultural practices.

Mines and Quarries Waste can be estimated by assuming that the area equates roughly with the Central Zone (as defined in the Cambridgeshire Aggregates (Minerals) Plan). A figure of 487,000 tonnes per year was reported for aggregate extraction wastes within the Central Zone. Clay extraction in and around Peterborough gives rise to an estimated 140,000 tonnes of over burden waste per year (based on an assumption of 20% of mineral extraction quantity as overburden waste). If it assumed that the Whittelsey clay extraction areas account for one third of this amount, then 46,000 tonnes arise within the area per year.

Total aggregate and clay extraction wastes are therefore in the order of 533,000 tonnes per year. These wastes are recovered or disposed of within the mineral extraction sites under the provisions of the Town and Country Planning system and the Mines and Quarries (Tips) Act 1969. The figure does not include general process wastes which leave extraction sites and enter normal disposal streams for disposal as industrial and commercial waste.

**Waste Management Licence Monitoring / Inspection Frequencies**

Co-disposal landfill taking difficult and special wastes	8 per month
Household, Commercial & or industrial waste landfill	4
Treatment Plant	4
Household, Commercial & or industrial waste transfer station	4
Household waste amenity sites	4
Landfill/transfer stations taking non-biodegradable waste	2
Industrial waste landfill (factory curtilage)	1
Metal recycling	1
In-house storage facilities	0.25

**LICENSED LANDFILL SITES**

Reference	Licensee	Site Address	Grid reference
LS 30	British Rail	Conington Sidings, Woodwalton	TL 203842
LS 197	Fenside Waste Management Ltd	Puddocks Hill, Warboys	TL 305817
LS 110	East Waste Ltd	Grunty Fen, Wilburton	
LS 121	Midland Land Reclamation Ltd	Short Drove, Somersham	TL 374800
LS 112	East Waste Ltd	Hundred Road, March	TL 407988

**NON-OPERATIONAL LICENSED LANDFILL SITES**

Reference	Licensee	Site Address	Grid reference
LS 93	Midland Land Reclamation Ltd	Long Drove, Somersham	TL 376789

**LICENSED SCRAPYARDS**

<i>Reference</i>	<i>Licensee</i>	<i>Site Address</i>	<i>Grid Reference</i>
SY 007	J Fuller and Sons	Chatteris	TL 389858
SY 008	CFC Disposals	Roffco Works March	TL 493970
SY 014	DMR Recycled Autoparts	Wilburton	TL 484773
SY 017	Chatteris Salvage	Chatteris	TL 388872
SY 018	Fenland Breakers	Commercial Rd March	TL 413983
SY 031	Sheltons Motors	Factory Bank Ramsey	TL 285865
SY 032	Ford Factors	Chainbridge March	TL 427003
SY 051	P. Chattell	Glebe Farm, Upton	TL 174787
SY 053	C.G.A. Fuller	New Road, Chatteris	TL 404864
SY 058	Smith's Autos	Factory Bank, Ramsey	TL 284858
SY 061	Enterprise Metals Ltd	Factory Bank, Ramsey	TL 284862
SY 066	Hardiman AutoSalvage	Creek Road, March	TL 425975
SY 067	Lakeside Vehicle Dismantlers	Station Road Wilburton	TL 487757
SY 088	H.J. Woodfield-	Station Yard, Bluntisham	TL 367743

**LICENSED TRANSFER STATIONS**

<i>Reference</i>	<i>Licensee</i>	<i>Site Address</i>	<i>Grid reference</i>
HHWRC06	Cambridgeshire County Council	Grunty Fen	TL 497778
HHWRC07	Cambridgeshire County Council	March	TL 410986
HHWRC03	Cambridgeshire County Council	Chatteris	TL 387863
HHWRC11	Cambridgeshire County Council	Whittlesey	TL 282968
HHWRC02	Cambridgeshire County Council	Bluntisham	TL 346749
TS 114	Cambridgeshire County Council	Station Street, Chatteris	TL 388864
TS 115	Cambridgeshire County Council	Queen Street, March	TL 418978
TS 129	Cambridgeshire County Council	North Street, Stilton	TL 162903
TS 166	Cambridgeshire County Council	Stirling Way, Witchford	TL 515788
TS 097	Huntingdon Plant Hire	Alms Close, Huntingdon	TL 234738
TS 100	Fenland Contract Services	Melbourne Avenue, March	TL 408985
TS 188	P.J. Thory Ltd	Eldernell Lane, Coates	TL 318980
TS104	Ogden & Phillips	Coleseed Road, March	TL 436960

**LICENSED TREATMENT PLANTS**

<i>Reference</i>	<i>Licensee</i>	<i>Site Address</i>	<i>Grid reference</i>
TP 014	Just Refiners & Technology Ltd	Highlode Industrial Estate, Ramsey	TL 286860

**CLOSED LANDFILL SITES**

No	Name	Grid	Gas Monitoring	Groundwater Monitoring	Leachate Monitoring
11	Peterborough (CEGB)***	109960	N	N	N
26	Warboys (London Brick Ltd)	309818	N	N	N
39	Chatteris (Barnes and Son)	395871	N	N	N
5J	Chatteris (Whitworth Produce Ltd)	391869	N	N	N
53	Wimblington (Mr Lemmon)	412913	N	N	N
55	Somersham (Redland Aggregates Ltd)	396798	N	N	N
71	Alconbury Airfield (ARC LTD)	228762	N	N	N
85	Upwood, Ramsey (C.C.C North Div')	263834	N	N	N
86	Block Fen, Mepal (ARC Ltd)	438843	N	N	N
115	Somersham (C.C.C)	357768	N	N	N
118	Southern Township, Peterborough	n/a	N	N	N
122	Southern Township, Peterborough	n/a	N	N	N
131	Grange Farm, Stukely,	232760	N	N	N
136	Brick Pit, Yaxley (London Brick)	191936	N	N	N
902	Whittlesey (P.C.C)	285969	N	N	N
903	Ramsey (C.C.C)	240850	N	N	N
905	Somersham 1 (C.C.C)	355790	N	N	N
906	Bluntisham (C.C.C)	345750	N	N	N
911	Chatteris (C.C.C)	405855	N	N	N
923	Wisbech Canal (C.C.C)	LONG	Y	N	N
928	Norman Cross (London Brick Ltd)	168912	N	N	N

**KEY TO TABLE HEADINGS**

- CAT Waste Category
- LCT Leachate Control or Treatment
- GW Groundwater Monitoring historically undertaken
- GM Gas Monitoring historically undertaken
- \*\*\* Site is on the edge of the plan area

**WASTE MANAGEMENT LICENSING EXEMPTED SITES**

**Exempted Scrapyards**

Name	Site Address	Reference
Dusty Bin Scrap	Fenlands, Puddock Road, Warboys	CAM/SY/EX/002
Burton's Car Disposal	Cockbrook Lane, Old Weston, Huntingdon	CAM/SY/EX/012
Carmans Autos	Outwell	Ex Norfolk WRA Registration

**Exemptions Spreading of waste on agricultural land**

DEPOSITOR	DEPOSIT SITE	WASTE TYPE	EXPIRY DATE
AG White Env. Serv.	Laddus Fen Friday Bridge Wisbech	19/7/96	18/1/97
G's Fresh Beetroot	land off A141 March	9/8/96	8/2/97
Albert Bartlett & Son	Great Acre Fen Chatteris	2/12/96	1/6/97
Priory Produce	Near Ash Road, Middlemoor, Fen, Colne	11/12/96	10/6/97

**Exemptions Spreading of waste on land for improvement**

<b>DEPOSITOR</b>	<b>DEPOSIT SITE</b>	<b>ACTIVITY</b>	<b>REG. DATE</b>
<i>GW England &amp; Son</i>	<i>Warboys Airfield Church Farm Warboys</i>	<i>Land reclamation: 1 metre soil</i>	<i>18/6/96</i>
<i>Fenside Waste Management</i>	<i>Warboys landfill site</i>	<i>Soil/rubble for construction - now covered by site licence</i>	<i>28/2/96</i>
<i>Anglia Alpines &amp; Herbs</i>	<i>St Ives Road Somersham</i>	<i>Use of soil/rubble for constructing hardstanding</i>	<i>19/8/96</i>
<i>Allens Skip Hire</i>	<i>Stan Darby Enterprises Block Fen Chatteris</i>	<i>Beneficial use</i>	<i>7/11/96</i>

**Exemptions Deposit of waste from inland water dredging**

- 1) *Co-Op Wholesale Society Ltd  
Estate Office, Caldharn, Wisbech*
- 2) *Railtrack East Anglia  
All waterways owned or maintained by Railtrack East Anglia within area*
- 3) *Infrastructure Services Central  
Operational railway land in area*
- 4) *Waters controlled by:*  
  
*Littleport and Downham IDB  
Cawdle Fen IDB*  
  
*Ramsey, Upwood and Great Raveley IDB  
Ramsey Second (Stocking Fen) IDB  
Ramsey Fourth (Middle Moor) IDB  
Ramsey First (Hollow) IDB  
Ramsey Fifth (Lodesend) IDB*
- 5) *Railtrack London North Eastern  
Railtrack LNE lines in area*
- 6) *Environment Agency  
All rivers, dykes and drains within area*

**APPENDIX D**

**WATER QUALITY**

*Class Limits for the Biological Classification*

<i>Water Quality</i>	<i>Biological Class</i>	<i>RIVPACS Ratio for ASPT</i>	<i>RIVPACS Ratio for Taxa</i>
<i>Very Good</i>	<i>a</i>	<i>1.00</i>	<i>&gt;0.85</i>
<i>Good</i>	<i>b</i>	<i>0.90</i>	<i>0.70</i>
<i>Fairly Good</i>	<i>c</i>	<i>0.77</i>	<i>0.55</i>
<i>Fair</i>	<i>d</i>	<i>0.65</i>	<i>0.45</i>
<i>Poor</i>	<i>e</i>	<i>0.50</i>	<i>0.30</i>
<i>Bad</i>	<i>f</i>	<i>-</i>	<i>-</i>

**General Quality Assessment (GQA)**

*Chemical Grading for Rivers and Canals*

<i>Water Quality</i>	<i>Grade</i>	<i>Dissolved Oxygen (% saturation) 10-percentile</i>	<i>Biochemical Oxygen Demand (ATU)<sup>1</sup> (mg/l) 90-percentile</i>	<i>Ammonia (mgN/l) 90-percentile</i>
<i>Very Good</i>	<i>A</i>	<i>80</i>	<i>2.5</i>	<i>0.25</i>
<i>Good</i>	<i>B</i>	<i>70</i>	<i>4</i>	<i>0.6</i>
<i>Fairly Good</i>	<i>C</i>	<i>60</i>	<i>6</i>	<i>1.3</i>
<i>Fair</i>	<i>D</i>	<i>50</i>	<i>8</i>	<i>2.5</i>
<i>Poor</i>	<i>E</i>	<i>20</i>	<i>15</i>	<i>9</i>
<i>Bad</i>	<i>F<sup>2</sup></i>	<i>-</i>	<i>-</i>	<i>-</i>

<sup>1</sup> as suppressed by adding allyl thio-urea

<sup>2</sup> quality which does not meet the requirements of Grade E in respect of one or more determinands.

**River Ecosystem Classification**

<b>Water Quality</b>	<b>Class</b>	<b>DO</b> % saturation 10-percentile	<b>BODA</b> mg/l 90-percentile	<b>NH<sub>3</sub>-N</b> mgN/l 90-percentile	<b>Un-ionised NH<sub>3</sub>-N</b> mgN 95-percentile	<b>pH</b> 5-percentile - 95-percentile	<b>Hardness</b> mg/l CaCO <sub>3</sub>	<b>Dissolved CU</b> µg/l 95-percentile	<b>Total ZN</b> µg/l 95-percentile
Very Good	RE1	80	2.5	0.25	0.021	6-9	≤10 >10 and ≤50 >50 and ≤100 >100	5 22 40 112	30 200 300 500
Good	RE2	70	4.0	0.6	0.021	6-9	≤10 >10 and ≤50 >50 and ≤100 >100	5 22 40 112	30 200 300 500
Fairly Good	RE3	60	6.0	1.3	0.021	6-9	≤10 >10 and ≤50 >50 and ≤100 >100	5 22 40 112	300 700 1000 2000
Fair	RE4	50	8.0	2.5	-	6-9	≤10 >10 and ≤50 >50 and ≤100 >100	5 22 40 112	300 700 1000 2000
Poor	RE5	20	15.0	9.0	-	-	-	-	-

**APPENDIX E - Identified Development and Environment Agency Identified Constraints within the Old Bedford LEAP.**

Local Planning Authority/Plan	Parish	General constraints identified in the plans	Development Sites - Identified in the plan	Environment Agency - General area constraints
<i>Huntingdonshire DC Adopted Local Plan 1995</i>	<i>Abbots Ripton</i>	•	<i>Land west and east of the B1090 (2.1 ha for housing)</i>	<p><i>Any proposal to discharge surface waters into watercourses should take prior regard of riparian ownerships for both adjacent and downstream watercourses.</i></p> <p><i>In this area, generally, it can prove difficult to provide adequate surface water drainage. Careful design consideration should be given prior to development.*</i></p>
<i>Huntingdonshire DC Adopted Local Plan 1995</i>	<i>Alconbury</i>	•	<i>Small area within LEAP -infill only</i>	<p><i>Any proposal to discharge surface waters into watercourses should take prior regard of riparian ownerships for both adjacent and downstream watercourses.</i></p> <p><i>Surface water drainage may be received directly by the relevant IDB. The Board should be consulted prior to development.</i></p> <p><i>In this area, generally, it can prove difficult to provide adequate foul and surface water drainage. Careful design consideration should be given prior to development.</i></p> <p><i>Fluvial flooding remains a concern.</i></p>
<i>Huntingdonshire DC Adopted Local Plan 1995</i>	<i>Alconbury Weston</i>	•	<i>Small area within the LEAP.</i>	
<i>Fenland DC Adopted Local Plan 1993</i>	<i>Benwick</i>	<p><i>Majority of the site is situated on the south side of the River Nene. The banks of the river are within a site of Natural History Interest.</i></p> <p><i>There is little spare capacity in the main drains. Any large scale development would require the existing system to be upgraded. Surface water is generally disposed of through the existing dyke system.</i></p>	<i>160 dwellings at 3 locations with planning permission.</i>	<i>Surface water drainage may be received directly by the relevant IDB. The Board should be consulted prior to development.</i>

<i>Local Planning Authority/Plan</i>	<i>Parish</i>	<i>General constraints identified in the plans</i>	<i>Development Sites - Identified in the plan</i>	<i>Environment Agency - General area constraints</i>
<i>Huntingdonshire DC Adopted Local Plan 1995</i>	<i>Bluntisham</i>	•	<i>Land east of Colne Road (1.9 ha for housing)</i>	<p><i>Any proposal to discharge surface waters into watercourses should take prior regard of riparian ownerships for both adjacent and downstream watercourses.</i></p> <p><i>Surface water drainage may be received directly by the relevant IDB. The Board should be consulted prior to development.</i></p> <p><i>In this area, generally, it can prove difficult to provide adequate surface water drainage. Careful design consideration should be given prior to development.</i></p>
<i>Huntingdonshire DC Adopted Local Plan 1995</i>	<i>Broughton</i>	•	<i>No allocation - infill only</i>	
<i>Fenland DC Adopted Local Plan 1993</i>	<i>Chatteris</i>	<p><i>Foul sewer capacity is inadequate, leading to a risk of storm over flow and pollution. The sewage treatment is over committed, improvements are required before further development can occur.</i></p> <p><i>Development on very large sites will need to be phased to allow water supply to be upgraded.</i></p> <p><i>A southern bypass is under consideration.</i></p>	<i>1270 dwellings at 6 locations including sites with planning permission. Also 28ha at 7 locations with permission for industrial development (B1, B2 and B8 uses)</i>	<p><i>Public foul sewer improvements have been carried out. Chatteris STW has been extended.</i></p> <p><i>Any proposal to discharge surface waters into watercourses should take prior regard of riparian ownerships for both adjacent and downstream watercourses.</i></p> <p><i>Surface water drainage may be received directly by the relevant IDB. The Board should be consulted prior to development.</i></p>
<i>Fenland DC Adopted Local Plan 1993</i>	<i>Christchurch (known as a parish)</i>	<i>The village is not served by a public foul sewer, similarly there is no public surface water sewer.</i>	<i>50 dwellings at Land north and South of Church Road. (existing permissions) Christchurch.</i>	<p><i>Surface water drainage may be received directly by the relevant IDB. The Board should be consulted prior to development.</i></p> <p><i>In this area, generally, it can prove difficult to provide adequate surface water drainage. Careful design consideration should be given prior to development.</i></p>
<i>Huntingdonshire DC Adopted Local Plan 1995</i>	<i>Colne</i>	•	<i>North of East Street (0.5 ha for housing)</i>	<p><i>Public foul sewer to Somersham STW.</i></p> <p><i>Any proposal to discharge surface waters into watercourses should take prior regard of riparian ownerships for both adjacent and downstream watercourses.</i></p> <p><i>Surface water drainage may be received directly by the relevant IDB. The Board should be consulted prior to development.</i></p> <p><i>In this area, generally, it can prove difficult to provide adequate surface water drainage. Careful design consideration should be given prior to development.</i></p>

<i>Local Planning Authority/Plan</i>	<i>Parish</i>	<i>General constraints identified in the plans</i>	<i>Development Sites - Identified in the plan</i>	<i>Environment Agency - General area constraints</i>
<i>Huntingdonshire DC Adopted Local Plan 1995</i>	<i>Conington</i>	*	<i>No allocation - infill only</i>	
<i>East Cambs DC Adopted Local Plan 1993</i>	<i>Coveney</i>	<i>None identified in Plan.</i>	<i>No allocation for housing - infill only/4 unimplemented permissions for housing mid 1995</i>	<i>Any proposal to discharge surface waters into watercourses should take prior regard of riparian ownerships for both adjacent and downstream watercourses.</i>
<i>Huntingdonshire DC Adopted Local Plan 1995</i>	<i>Denton and Caldecote</i>	*	<i>No allocation - infill only</i>	<i>No public foul sewers in this area.</i>  <i>Any proposal to discharge surface waters into watercourses should take prior regard of riparian ownerships for both adjacent and downstream watercourses.</i>
<i>Fenland DC Adopted Local Plan 1993</i>	<i>Doddington</i>	<i>No mains foul age, limited by the size of sewers and some operational problems with existing pumping stations. Any large development may exacerbate these problems. Limited availability of surface water sewers.</i>	<i>200 dwellings at 5 sites (includes 103 with permission). Also permission for 6 workplace homes to the east of Turf Fen Lane.</i>	<i>Doddington STW has been extended.</i>  <i>Any proposal to discharge surface waters into watercourses should take prior regard of riparian ownerships for both adjacent and downstream watercourses.</i>  <i>Surface water drainage may be received directly by the relevant IDB. The Board should be consulted prior to development.</i>  <i>In this area, generally, it can prove difficult to provide adequate surface water drainage. Careful design consideration should be given prior to development.</i>
<i>East Cambs DC Adopted Local Plan 1993</i>	<i>Downham</i>	<i>None identified in Plan.</i>	<i>Land at the north of Lawn Lane, Little Downham for 20 dwellings.</i>	
<i>King's Lynn and West Norfolk BC Deposit Draft Local Plan June 1994</i>	<i>Downham West</i>	**	<i>No allocation - infill only. Small area within the LEAP.</i>	<i>Any proposal to discharge surface waters into watercourses should take prior regard of riparian ownerships for both adjacent and downstream watercourses.</i>

<i>Local Planning Authority/Plan</i>	<i>Parish</i>	<i>General constraints identified in the plans</i>	<i>Development Sites - Identified in the plan</i>	<i>Environment Agency - General area constraints</i>
<i>Huntingdonshire DC Adopted Local Plan 1995</i>	<i>Earith</i>	*	<i>No allocation - infill only. A1123 to Hartford improvement proposed.</i>	<i>Public foul sewers to Somersham STW.  Any proposal to discharge surface waters into watercourses should take prior regard of riparian ownerships for both adjacent and downstream watercourses.  Surface water drainage may be received directly by the relevant IDB. The Board should be consulted prior to development.  In this area, generally, it can prove difficult to provide adequate surface water drainage. Careful design consideration should be given prior to development.</i>
<i>Fenland DC Adopted Local Plan 1993</i>	<i>Elm</i>	<i>Drainage is linked to the Wisbech/West Walton system and is adequate at present. However, any further large scale development would require more detailed examination of spare capacity levels. This may result in upgrading of pumping stations. There is no surface water system.</i>	<i>125 dwellings at Friday Bridge.</i>	<i>Surface water drainage may be received directly by the relevant IDB. The Board should be consulted prior to development.</i>
<i>East Cambs DC Report April 1996</i>	<i>Ely</i>		<i>1162 houses allocated in Ely itself mid 1995. Small area in the LEAP.</i>	<i>Surface water drainage may be received directly by the relevant IDB. The Board should be consulted prior to development.</i>
<i>Huntingdonshire DC Adopted Local Plan 1995</i>	<i>Farcel</i>	*	<i>No allocation - infill only. B1091 to Yaxley improvement proposed.</i>	
<i>Huntingdonshire DC Adopted Local Plan 1995</i>	<i>Folksworth and Washingley</i>	*	<i>1.9ha for housing. Small area in the catchment.</i>	<i>Any proposal to discharge surface waters into watercourses should take prior regard of riparian ownerships for both adjacent and downstream watercourses.</i>
<i>Huntingdonshire DC Adopted Local Plan 1995</i>	<i>Glatton</i>	*	<i>Land south of Infield Road (0.9 ha for housing) - infill only.</i>	<i>Public foul sewers to Sawtry.  Any proposal to discharge surface waters into watercourses should take prior regard of riparian ownerships for both adjacent and downstream watercourses.</i>

<i>Local Planning Authority/Plan</i>	<i>Parish</i>	<i>General constraints identified in the plans</i>	<i>Development Sites - Identified in the plan</i>	<i>Environment Agency - General area constraints</i>
<i>East Cambs DC Adopted Local Plan 1993</i>	<i>Haddenham</i>	<i>Eastern bypass has been approved</i>	<i>Land east of Hinton View (20 dwellings), Land at West End (6 dwellings), Other site (up to 30 dwellings). There are 53 sites with planning permission. Scope for expansion of existing business park. 52 unimplemented housing permissions and 6 allocations remaining mid 1995. Small area in the LEAP.</i>	<i>Any proposal to discharge surface waters into watercourses should take prior regard of riparian ownerships for both adjacent and downstream watercourses.</i>
<i>Huntingdonshire DC Adopted Local Plan 1995</i>	<i>Holme</i>	<i>*</i>	<i>Land east of Church Street (2.8 ha for housing)</i>	<i>Surface water drainage may be received directly by the relevant IDB. The Board should be consulted prior to development.</i>  <i>In this area, generally, it can prove difficult to provide adequate surface water drainage. Careful design consideration should be given prior to development.</i>
<i>Huntingdonshire DC Adopted Local Plan 1995</i>	<i>Kings Ripton</i>	<i>*</i>	<i>No allocation for housing - infill only.</i>	
<i>Fenland DC Adopted Local Plan 1993</i>	<i>Manea</i>	<i>Drainage is a major issue. The foul sewerage system is split into 3 areas, each of which is either currently at or over capacity. Anglian Water has improvements to this system in its capital programme to be completed by July 1994. There are no surface water sewers available. Further development will need to make provision for upgrading the system</i>	<i>360 dwellings mostly already with planning permission (299)</i>  <i>There are permissions for B1, B2 and B8 uses west of station Road.</i>	<i>Glebe Close STW is now closed, flows are pumped to Manea Town STW which has been refurbished.</i>  <i>Surface water drainage may be received directly by the relevant IDB. The Board should be consulted prior to development.</i>

Local Planning Authority/Plan	Parish	General constraints identified in the plans	Development Sites - Identified in the plan	Environment Agency - General area constraints
Fenland DC Adopted Local Plan 1993	March	<p>The foul sewage treatment works is located to the north east of the town and is likely to reach its design capacity when all existing planning permissions for housing are implemented. The foul sewer system north of the river will also be at capacity when all existing permissions are implemented. Land allocations to the south of the river will bring the system in that area to design capacity also. Much of the existing system carries surface and foul water flows, only foul connections will be allowed from new development. Additionally there are local problems which need to be overcome before certain areas of the town can be developed.</p> <p>Trading Park abuts a County Council waste disposal site which has a 250m consultation zone around it.</p> <p>The possibility of a relief road is under consideration.</p>	<p>1735 dwellings including sites with planning permission.</p> <p>50.3ha with permission at 4 sites for industrial, business, general, storage and distribution uses.</p> <p>1ha at Whittlesey Road for a workplace home development.</p>	<p>There are unsatisfactory public foul water storm overflows to the Old Course of the River Nene in March town centre. Improvements are scheduled for completion by 2000.</p> <p>Surface water drainage may be received directly by the relevant IDB. The Board should be consulted prior to development.</p> <p>Any proposal to discharge surface waters into watercourses should take prior regard of riparian ownerships for both adjacent and downstream watercourses.</p>
East Cambs DC - Adopted Local Plan 1993	Mepal	None identified in Plan.	<p>Land between Brangehill Lane and Brick Lane (90 dwellings). Land between Witcham Road and Sutton Road (60 dwellings). Two other sites have permission for residential development./ 141 permissions for housing mid 1995.</p>	<p>In this area, generally, it can prove difficult to provide adequate surface water drainage. Careful design consideration should be given prior to development.</p> <p>Any proposal to discharge surface waters into watercourses should take prior regard of riparian ownerships for both adjacent and downstream watercourses.</p>
King's Lynn and West Norfolk BC Deposit Draft Local Plan June 1994	Nordelph	**	No allocation - infill only.	Surface water drainage may be received directly by the relevant IDB. The Board should be consulted prior to development.
Huntingdonshire DC Adopted Local Plan 1995	Oldhurst	.	No allocation - infill only.	
King's Lynn and West Norfolk BC Deposit Draft Local Plan June 1994	Outwell	**	No allocation - infill only.	<p>Surface water drainage may be received directly by the relevant IDB. The Board should be consulted prior to development.</p> <p>In this area, generally, it can prove difficult to provide adequate surface water drainage. Careful design consideration should be given prior to development.</p>

<i>Local Planning Authority/Plan</i>	<i>Parish</i>	<i>General constraints identified in the plans</i>	<i>Development Sites - Identified in the plan</i>	<i>Environment Agency - General area constraints</i>
<i>Huntingdonshire DC Adopted Local Plan 1995</i>	<i>Pidley cum Fenton</i>	•	<i>Land south - west of Warboys Road (0.8 ha for housing)</i>	<i>Public foul sewers to Oldhurst STW.  Any proposal to discharge surface waters into watercourses should take prior regard of riparian ownerships for both adjacent and downstream watercourses.</i>
<i>Huntingdonshire DC Adopted Local Plan 1995</i>	<i>Ramsey (including Bury)</i>	•	<i>Site between Upwood Road and St Mary's Road Ramsey (105ha - 1700 dwellings). Ramsey St Mary's (4.8ha for housing) - limited growth. Ramsey Mereside (2.1ha for housing) and Ramsey Forty Foot - group and infill only. Ramsey Heights (1.0ha for housing) - infill only. 16.6ha for B1, B2 and B8 uses proposed. B1040 to A141 improvement proposed, a relief road for Ramsey and Bury is required and a car park at Mews Close Ramsey is proposed.</i>	<i>Surface water drainage may be received directly by the relevant IDB. The Board should be consulted prior to development.  In this area, generally, it can prove difficult to provide adequate surface water drainage. Careful design consideration should be given prior to development.</i>
<i>Huntingdonshire DC Adopted Local Plan 1995</i>	<i>Sawtry</i>	•	<i>Land east of Beaumaris Road, Land at Louthe Way, Land south of Fen Lane, Land east of Church Street (2.7 ha for housing - 450 dwellings), 6.5ha for B1 and B2 uses proposed.</i>	<i>New STW.  Any proposal to discharge surface waters into watercourses should take prior regard of riparian ownerships for both adjacent and downstream watercourses.</i>
<i>Huntingdonshire DC Adopted Local Plan 1995</i>	<i>Somersham</i>	•	<i>3.6 ha for housing at three sites and employment allocation.</i>	<i>Discharges from Somersham STW have an adverse impact on the Cranbrook Drain. Improvement works are planned for completion by 2000.  Any proposal to discharge surface waters into watercourses should take prior regard of riparian ownerships for both adjacent and downstream watercourses.  In this area, generally, it can prove difficult to provide adequate surface water drainage. Careful design consideration should be given prior to development.</i>
<i>Huntingdonshire DC Adopted Local Plan 1995</i>	<i>Stilton</i>	•	<i>No allocation - infill only.</i>	

<i>Local Planning Authority/Plan</i>	<i>Parish</i>	<i>General constraints identified in the plans</i>	<i>Development Sites - Identified in the plans</i>	<i>Environment/Agency - General area constraints</i>
<i>East Cambs DC - Adopted Local Plan 1993</i>	<i>Stretham</i>	<i>None identified in Plan.</i>	<i>Five sites with planning permission. Small area in the LEAP.</i>	<p><i>Any proposal to discharge surface waters into watercourses should take prior regard of riparian ownerships for both adjacent and downstream watercourses.</i></p> <p><i>Surface water drainage may be received directly by the relevant IDB. The Board should be consulted prior to development.</i></p> <p><i>In this area, generally, it can prove difficult to provide adequate surface water drainage. Careful design consideration should be given prior to development.</i></p>
<i>East Cambs DC - Adopted Local Plan 1993</i>	<i>Sutton</i>	<i>None identified in Plan.</i>	<i>Land north of The Brook (65 dwellings), land east of Mepal House (5 dwellings), other appropriate sites. There are 19 sites with planning permission./ 93 permissions for housing and 65 allocations for housing mid 1995. Also 18.7ha for employment uses mid 1995.</i>	<p><i>Public foul sewers to Witcham STW which is close to capacity.</i></p> <p><i>Any proposal to discharge surface waters into watercourses should take prior regard of riparian ownerships for both adjacent and downstream watercourses.</i></p> <p><i>Surface water drainage may be received directly by the relevant IDB. The Board should be consulted prior to development.</i></p> <p><i>In this area, generally, it can prove difficult to provide adequate surface water drainage. Careful design consideration should be given prior to development.</i></p>
<i>Huntingdonshire DC Adopted Local Plan 1995</i>	<i>The Stukeleys</i>	<i>*</i>	<i>Small area within the LEAP.</i>	
<i>East Cambs DC - Adopted Local Plan 1993</i>	<i>Thetford</i>	<i>None identified in Plan.</i>	<p><i>Infill only and land north of The Witches for approximately 20 dwellings and land south of Popes Lane for approximately 20 dwellings.</i></p> <p><i>Existing permissions for residential development to the west of Watson's Lane. Small area in the LEAP.</i></p>	<p><i>Any proposal to discharge surface waters into watercourses should take prior regard of riparian ownerships for both adjacent and downstream watercourses.</i></p> <p><i>Surface water drainage may be received directly by the relevant IDB. The Board should be consulted prior to development.</i></p> <p><i>In this area, generally, it can prove difficult to provide adequate surface water drainage. Careful design consideration should be given prior to development.</i></p>
<i>Huntingdonshire DC Adopted Local Plan 1995</i>	<i>Upton and Coppingford</i>	<i>*</i>	<i>Small area within the LEAP.</i>	
<i>King's Lynn and West Norfolk BC Deposit Draft Local Plan June 1994</i>	<i>Upwell</i>	<i>**</i>	<i>No allocation - infill only.</i>	<p><i>Surface water drainage may be received directly by the relevant IDB. The Board should be consulted prior to development.</i></p> <p><i>In this area, generally, it can prove difficult to provide adequate surface water drainage. Careful design consideration should be given prior to development.</i></p>

<i>Local Planning Authority/Plan</i>	<i>Parish</i>	<i>General constraints identified in the plans</i>	<i>Development Sites - Identified in the plan</i>	<i>Environment Agency - General area constraints</i>
<i>Huntingdonshire DC Adopted Local Plan 1995</i>	<i>Upwood and Raveleys</i>	*	<i>Upwood (1.6ha for housing)</i>	<i>Great and Little Raveley areas are without public foul sewers, with localised problems associated with septic tanks.</i>  <i>Any proposal to discharge surface waters into watercourses should take prior regard of riparian ownerships for both adjacent and downstream watercourses.</i>
<i>Huntingdonshire DC Adopted Local Plan 1995</i>	<i>Warboys</i>	*	<i>2.2 ha for housing - 350 dwellings</i>	<i>Any proposal to discharge surface waters into watercourses should take prior regard of riparian ownerships for both adjacent and downstream watercourses.</i>  <i>In this area, generally, it can prove difficult to provide adequate surface water drainage. Careful design consideration should be given prior to development.</i>
<i>King's Lynn and West Norfolk BC Deposit Draft Local Plan June 1994</i>	<i>Welney</i>	**	<i>No allocation - infill only.</i>	<i>Welney is without public foul sewer.</i>  <i>Surface water drainage may be received directly by the relevant IDB. The Board should be consulted prior to development.</i>  <i>In this area, generally, it can prove difficult to provide adequate surface water drainage. Careful design consideration should be given prior to development.</i>
<i>East Cambs DC - Adopted Local Plan 1993</i>	<i>Wentworth</i>	<i>None identified in Plan.</i>	<i>No allocation - infill only. Small area in the LEAP.</i>	
<i>Fenland DC Adopted Local Plan 1993</i>	<i>Whittlesey</i>	<i>Whittlesey sewage works is operating near capacity, Anglian Water considers improvements (in capital programme 1993) are needed before further development goes ahead. Improvement works due to be completed in March 1995. Ashline Terminal Pumping Station will require up-grading to cater for existing permissions. There is also a capacity problem in the existing sewerage system in the south western part of the town.</i>  <i>A new road link between East Delph and Eastrea Road is considered necessary.</i>	<i>1540 dwellings including sites with planning permission at Whittlesey. Eastrea - 50 dwellings, Turves - 100 dwellings, and infill.</i>  <i>29.8ha for business, general industry, storage and distribution purposes north of Peterborough Road including existing permissions.</i>  <i>Small area of the settlement is in the LEAP.</i>	<i>Discharges from Whittlesey STW have an adverse impact on the Whittlesey Dyke.</i>  <i>Any proposal to discharge surface waters into watercourses should take prior regard of riparian ownerships for both adjacent and downstream watercourses.</i>  <i>Surface water drainage may be received directly by the relevant IDB. The Board should be consulted prior to development.</i>
<i>East Cambs DC - Adopted Local Plan 1993</i>	<i>Wilburton</i>	<i>None identified in Plan.</i>	<i>No allocation - infill only.</i>	<i>Any proposal to discharge surface waters into watercourses should take prior regard of riparian ownerships for both adjacent and downstream watercourses.</i>

<i>Local Planning Authority/Plan</i>	<i>Parish</i>	<i>General constraints identified in the plans</i>	<i>Development Sites - Identified in the plan</i>	<i>Environment Agency - General area constraints</i>
<i>Fenland DC Adopted Local Plan 1993</i>	<i>Wimblington</i>	<i>There is some foul drainage capacity to the north of the village but very little to the south of Chapel Lane. There are only limited surface water sewers available. Adequate provision for disposal must be made before development can be permitted.</i>	<i>East of March Road, North of Chapel Lane, South of Chapel Lane (245 dwellings including existing permissions)  9ha for business, general industry, storage and distribution purposes north of Bridge Lane with permission. Small area in the LEAP.</i>	<i>Any proposal to discharge surface waters into watercourses should take prior regard of riparian ownerships for both adjacent and downstream watercourses.  Surface water drainage may be received directly by the relevant IDB. The Board should be consulted prior to development.</i>
<i>Huntingdonshire DC Adopted Local Plan 1995</i>	<i>Wistow</i>	<i>*</i>	<i>1.1 ha for housing - group or infill only</i>	<i>Any proposal to discharge surface waters into watercourses should take prior regard of riparian ownerships for both adjacent and downstream watercourses.</i>
<i>East Cambs DC - Adopted Local Plan 1993</i>	<i>Witcham</i>	<i>None identified in Plan.</i>	<i>No allocation - infill only. 18 permissions for housing mid 1995.</i>	<i>Witcham STW is close to capacity.  Any proposal to discharge surface waters into watercourses should take prior regard of riparian ownerships for both adjacent and downstream watercourses.  Surface water drainage may be received directly by the relevant IDB. The Board should be consulted prior to development.</i>
<i>East Cambs DC - Adopted Local Plan 1993</i>	<i>Witchford</i>		<i>Land north of Main Street (200 dwellings) and other appropriate sites. There are 70 sites with planning permission. 129 permissions for housing and 200 allocations for housing, also 17.32ha for employment uses mid 1995.</i>	<i>Any proposal to discharge surface waters into watercourses should take prior regard of riparian ownerships for both adjacent and downstream watercourses.  In this area, generally, it can prove difficult to provide adequate surface water drainage. Careful design consideration should be given prior to development.</i>
<i>Huntingdonshire DC Adopted Local Plan 1995</i>	<i>Woodhurst</i>	<i>*</i>	<i>No allocation - infill only.</i>	
<i>Huntingdonshire DC Adopted Local Plan 1995</i>	<i>Woodwalton</i>	<i>*</i>	<i>No allocation - infill only.</i>	
<i>Huntingdonshire DC Adopted Local Plan 1995</i>	<i>Yaxley</i>	<i>*</i>	<i>13.5 ha for housing - 500 dwellings. 14.17ha for B1 and B2 uses proposed. B1090 to Farcet improvement proposed.</i>	<i>In this area, generally, it can prove difficult to provide adequate foul and surface water drainage. Careful design consideration should be given prior to development.</i>

*Notes*

\* *Huntingdonshire District Local Plan does not give details of constraints on a settlement by settlement or parish by parish basis.*

\*\* *Kings Lynn and West Norfolk Borough Local Plan does not give details of constraints on a settlement by settlement or parish by parish basis.*

*Environment Agency Policies regarding the constraints identified in this table are given in the following documents:-*

*'Guidance Notes for Local Planning Authorities on the Methods of Protecting the Water Environment through Development Plans' January 1994 published by the National Rivers Authority.*

*'Policy and Practice for the Protection of Floodplains' March 1997 published by the Environment Agency.*

*'Policy and Practice for the Protection of Groundwater' 1992 published by the National Rivers Authority.*

# NOTES

## MANAGEMENT AND CONTACTS:

The Environment Agency delivers a service to its customers, with the emphasis on authority and accountability at the most local level possible. It aims to be cost-effective and efficient and to offer the best service and value for money.

Head Office is responsible for overall policy and relationships with national bodies including Government.

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For general enquiries please call your local Environment Agency office. If you are unsure who to contact, or which is your local office, please call our general enquiry line.

### ENVIRONMENT AGENCY GENERAL ENQUIRY LINE

**0645 333 111**

The 24-hour emergency hotline number for reporting all environmental incidents relating to air, land and water.

### ENVIRONMENT AGENCY EMERGENCY HOTLINE

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