EA- ANGLIAN Box 18

Great Ouse Local Flood Defence Committee

ANNUAL REPORT

1997 - 1998

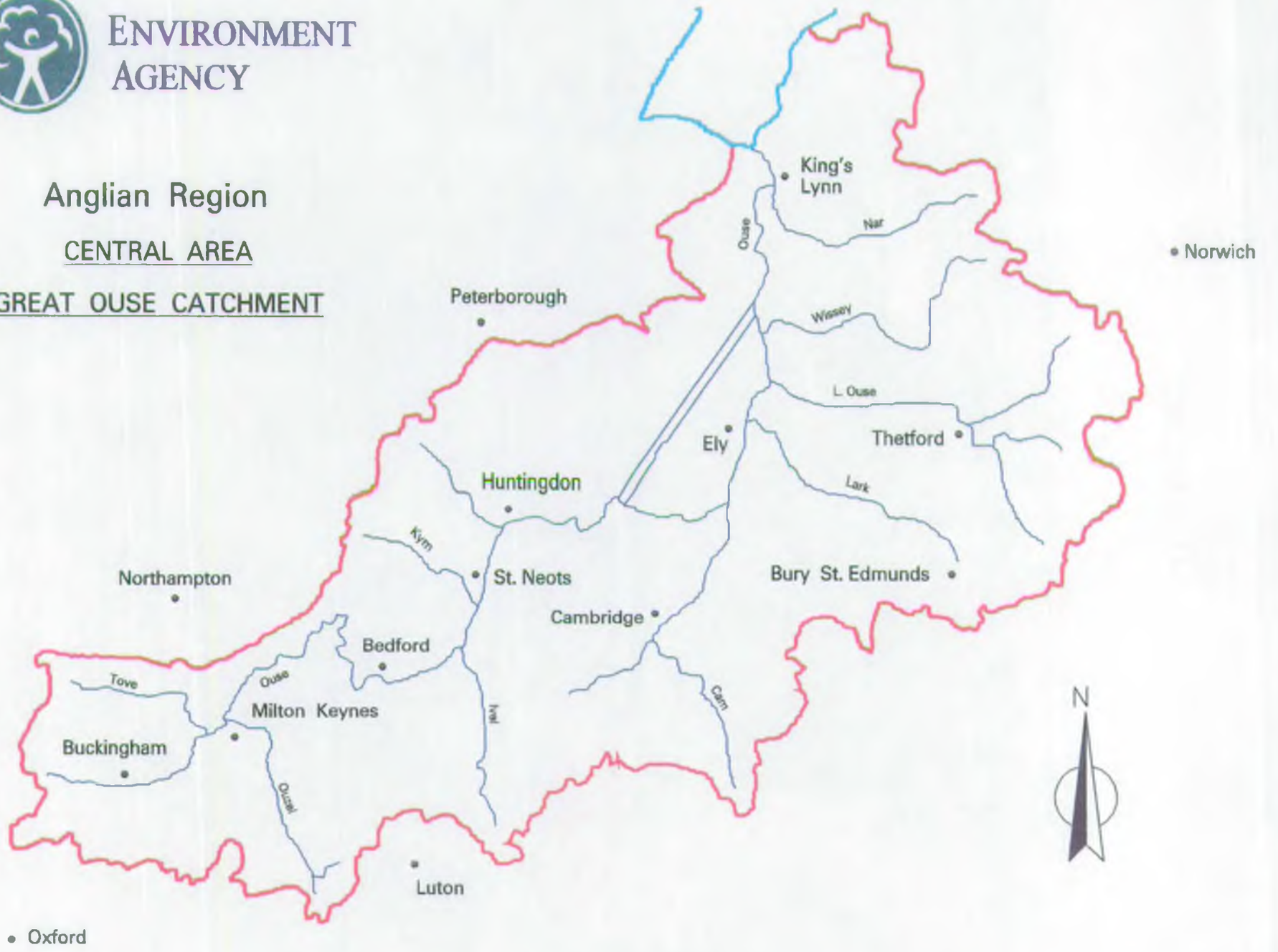
ENVIRONMENT AGENCY

ENVIRONMENT AGENCY

Anglian Region

CENTRAL AREA

GREAT OUSE CATCHMENT



CONTENTS

GREAT OUSE LOCAL FLOOD DEFENCE COMMITTEE

LIST OF MEMBERS

APPOINTED BY THE REGIONAL FLOOD DEFENCE COMMITTEE:-

	A J MORBEY FORGE COTTAGE LOWER ROAD STUNTNEY ELY CAMBRIDGESHIRE	
(CHAIRMAN)	CB7 5TL	TEL: (01353) 663275
	J E HEADING DENEGATES LONDON ROAD CHATTERIS CAMBRIDGESHIRE	
	PE16 6SF	TEL: (01354) 692631
	C D BOUGHTON FIELD END HOUSE BENWICK ROAD DODDINGTON MARCH CAMBRIDGESHIRE	
	PE15 0SH	TEL: (01354) 740373
	A G F RICHARDSON PARADISE FARM WALSOKEN WISBECH CAMBRIDGESHIRE	
	PE14 7BQ	TEL: (01945) 584678
	G WILLIAMS 10 WEST ROAD GAMLINGAY SANDY BEDFORDSHIRE	
	SG19 3JT	TEL: (01767) 650834

C J H WILSON
MANOR FARM
IXWORTH THORPE
BURY ST EDMUNDS
SUFFOLK
IP31 1QH TEL: (01359) 268744

J F WRIGHT
70 CHURCH ROAD
WOBURN SANDS
MILTON KEYNES
BUCKINGHAMSHIRE
MK17 7TA TEL: (01908) 583363

APPOINTED BY THE CONSTITUENT COUNTY COUNCILS:-

BEDFORDSHIRE COUNTY COUNCIL

CLLR R PAYNE
2 THE GRANGEWAY
WILLINGTON
BEDFORD
BEDFORDSHIRE
MK44 3QW TEL: (01234) 838454

CLLR R HALL
2 POLHILL AVENUE
BEDFORD
BEDFORDSHIRE
MK41 9DS

MILTON KEYNES COUNCIL

CLLR B TAPP
2 BULLINGTON END ROAD
CASTLE THORPE
MILTON KEYNES
MK19 7ER TEL: (01908) 510492

CAMBRIDGESHIRE COUNTY COUNCIL

CLLR P R BISHOP
72 WINDMILL LANE
HISTON
CAMBRIDGESHIRE
CB4 4JF TEL: (01223) 237622

CLLR J A P EDDY
NEW FARM
MEADOW DROVE
EARITH
CAMBRIDGESHIRE
PE13 3QE TEL: (01487) 841476

HERTFORDSHIRE COUNTY COUNCIL

CLLR A K GRAY
DRAGON COTTAGE FARM
DANCERS LANE
BARNET
HERTFORDSHIRE
EN5 4RW TEL: (0181)4471510

NORFOLK COUNTY COUNCIL

CLLR R C ROCKCLIFFE
KILN HOUSE
34 THIEVES BRIDGE ROAD
WATLINGTON
KING'S LYNN
NORFOLK
PE33 0HL TEL: (01553) 810331

SUFFOLK COUNTY COUNCIL

CLLR D J LOCKWOOD
7 BIRCHDALE COURT
FORNHAM ST MARTIN
BURY ST EDMUNDS
SUFFOLK
IP28 6XF TEL: (01284) 753123

AREA ENVIRONMENT GROUP REPRESENTATIVE

C J CLARE
BEECH LODGE
CHURCH ROAD
WISBECH ST MARY
CAMBRIDGESHIRE
PE13 4RN

ENVIRONMENT AGENCY

ANGLIAN REGION

KINGFISHER HOUSE, GOLDHAY WAY, ORTON GOLDHAY, PETERBOROUGH, PE2 OZR

TELEPHONE (01733) 371811

OFFICERS

(AS AT 31ST MARCH 1998)

REGIONAL HEADQUARTERS

REGIONAL GENERAL MANAGER	GRAINGER DAVIES
REGIONAL FINANCE MANAGER	IAN RIPLEY
REGIONAL WATER MANAGER	GRAHAM WILSON
REGIONAL FLOOD DEFENCE MANAGER	STEPHEN WHEATLEY
REGIONAL ENGINEERING MANAGER	GORDON HEALD

CENTRAL AREA

AREA MANAGER	KEITH STONELL
AREA FLOOD DEFENCE MANAGER	NIGEL WOONTON
CUSTOMER SERVICES/BUSINESS SERVICES MANAGER	NIGEL FAWTHROP
WATER RESOURCES MANAGER	PAT SONES
FISHERIES, ECOLOGY AND RECREATION MANAGER	MIKE EVANS
CATCHMENT ENGINEER (NORTH)	DAVID GILLETT
CATCHMENT ENGINEER (SOUTH)	DAVID COTTERELL
OPERATIONS ENGINEER	PETER STARLING

Great Ouse Local Flood Defence Committee

ANNUAL REPORT

1997 - 1998

INTRODUCTION

This year has seen one of the most exciting construction projects to have been undertaken on the Great Ouse system for many years. I refer, of course, to the reconstruction of Welmore Lake Sluice where work commenced on site in July. Progress to date has been very good and despite the fact that it is being constructed within the tidal channel, the use of the 45 metre diameter cofferdam has enabled work to proceed unhindered by the elements since work began. The number of visits we have arranged to this site since work started is testimony to the interest in this project.

A glance at the Hydrological report could indicate that the drought of the last two years has been broken. Although we have not had to deal with any serious flood events during the year, discharges during December, January and March were sufficient for the Ouse Washes to become significantly flooded. This is now causing us some difficulty. To achieve the Water Level Management Plan target level of 0.5m AOD in the River Delph at Welmore Lake by 1st May, additional pumping has essentially been installed to clear water from the Washes which cannot be discharged by gravity. This effort is required in order to support the agreed sustainable management regime within the Washes, i.e, Summer grazing.

The need to pump water from the Washes is a symptom of the most important issue we currently have to face within the Great Ouse system and that is tidal river siltation. Rising bed levels in the Tidal River are seriously affecting our ability to discharge water through Welmore Lake, the Denver sluices and the Old Bedford sluice. The Tidal River Siltation Project has identified options for further study and we are now progressing with the detailed appraisals. However, the best solution to the problem would be a return to more historically normal winter flows over a number of years, otherwise the solution could be very expensive.

Since the Agency acquired the lead role in the dissemination of flood warnings direct to the public, a lot of work has been done. Dissemination plans have been drawn up in consultation with the county emergency services, our emergency procedures have been expanded and refined, new systems have been installed to both disseminate information, e.g, Automatic Voice Messaging (AVM) and provide information, e.g, Floodcall recorded message service. Arrangements have been agreed with local radio stations to transmit warnings. New duty roster systems have been set up to cover Duty Officers, Assistant Duty Officers and Dissemination Officers. These rosters involve staff from all functions of the Agency and a programme of initial training and refresher training is being undertaken, so that they are familiar with the emergency procedures and the use of the flood warning equipment. This work now forms the foundation on which to build and expand our service of direct warnings to those living in the areas at most risk of flooding. This year has seen the production of our 5 year plan for implementation of direct flood warnings to the public.

At the end of a very busy year it is satisfying to reflect on the fact that, in addition to our planned GEC of £2.9 million, the Committee was able to secure an additional £1.05 million (some 40% extra) in Grant Aid towards further improvements to our defences.

NIGEL WOONTON
Area Flood Defence Manager

CAPITAL WORKS

OUSE WASHES FLOOD CONTROL STRATEGY
Project Number 11043

Approved Estimated Cost	£	326,000
Expenditure in 1997/98	£	Nil
Total expenditure to 31 March 1998	£	368,000

The Strategy was granted a revised Approval in Principle by MAFF of £6,491,740 in July 1997. The total value of the works recommended by the Strategy is £8.110 million of which £7.46 million represents capital works and fees and the remaining £0.65 million represents revenue expenditure already accommodated within the Agency's programme. English Nature have since established a group constituted from Liaison Group members and other Washes users with the objective of seeking solutions to provide the desired level of environmental enhancement. The Environment Agency is represented on this Group. The elements of the Strategy, namely Reconstruction of Welmore Lake Sluice, Improvements to the Cradge Bank, Diversion of water to the Old West River, Raising Earith Drawmark and Maintaining the Structures of the Ouse Washes, are being progressed through separate projects within the Capital Programme and are thus reported separately.

CRADGE BANK IMPROVEMENTS
Project Number 11045

Approved Estimated Cost	£	60,000
Expenditure in 1997/98	£	16,000
Total expenditure to 31 March 1998	£	50,000

As agreed with the Wetlands & Wildfowl Trust, raising of a 6.8km length of Cradge Bank between Welmore Sluice and Welney Suspension Bridge was started during 1996 and completed by September 1997. The work was undertaken by Central Area Direct Services Group to raise low spots in the bank and widen narrow sections with material dredged from the Hundred Foot River. This will help reduce the risk of breaching during winter floods and overtopping during high tides in summer.

DIVERSION OF WATER TO THE OLD WEST RIVER
Project Number 11048

Approved Estimated Cost	£	800,000
Expenditure in 1997/98	£	Nil
Total expenditure to 31 March 1998	£	Nil

The Strategy identifies a new structure at Hemitage Lock to divert up to 5m^3/sec in the Old West and so reduce the frequency of Summer Flooding in the Washes.This project is included within the Capital Programme for years 1999/00 onwards. So that this option can be fully developed, further investigation is being undertaken into the feasibility of modifying the existing structure.

WELMORE LAKE SLUICE RECONSTRUCTION
Project Number 11047

Approved Estimated Cost	£ 5,201,000
Expenditure in 1997/98	£ 3,378,000
Total expenditure to 31 March 1997	£ 3,571,000

The project was approved by MAFF in July 1997 in the sum of £5,147,740 (excluding fees,salaries and the cost of an independent design review). Contracts were subsequently awarded to Jackson Civil Engineering (Civils) and Aquafine Engineering Services (Mech/Elec), and a two year construction programme commenced on site at the end of July 1997.

The requirements for the new sluice include an increase of 50% in open waterway area, sluices to be operable from Denver via the telemetry system, tidal mitre gates to exclude saline water from the Ouse Washes, guillotine gates to provide water level control for the Ouse Washes (River Delph). The location of the new sluice will be nearer the Hundred Foot River to reduce the siltation problems associated with the current sluice. A pumping station is to be incorporated to facilitate drainage of the Ouse Washes (River Delph) to the normal retention level which may be below low tide level in the Hundred Foot River when necessary.

In Aug 1998 work will commence on the first phase of gate installation and this will continue with other associated M&E work until Feb 1999, at which point the civils work will restart finishing with demolition of the old sluice and commissioning of the new structure in July 1999.

ELY OUSE FLOOD DEFENCE STRATEGY
Project Number 11005 and 11006

Approved Estimated Cost	£ 77,500
Expenditure in 1997/98	£ 6,500
Total expenditure to 31 March 1998	£ 6,500

Although the original strategy was concluded in 1994/95, now the engineering works are complete, Environmental and Physical monitoring of the sites will continue and provide valuable data towards a further review of the strategy in 1999.

ELY OUSE FLOOD DEFENCES UNITS 1 AND 2
Project Numbers 11060 to 11068

Approved Estimated Cost	£ 1,760,000
Expenditure in 1997/98	£ 450,000
Total expenditure to 31 March 1998	£ 1,707,000

The works, constructed by the Central Area Direct Services Group, were successfuly completed in October 1998 at a total cost of £1,707,000 (including design and supervision). They consist primarily of sheet piled revetments to the Ten Mile River and River Wissey and

to some of these works reed planting in fibre rolls has been added to improve the environmental value of the riverside margins.

The intention of the strategy is to allow natural river processes to continue where possible, but where erosion of the riverbank threatens the stability of flood defence works, revetment has been used to stabilise the situation..

MIDDLE LEVEL BARRIER BANK EROSION PROTECTION
Project Number 11334

Approved Estimated Cost	£ 127,000
Expenditure in 1997/98	£ 120,000
Total expenditure to 31 March 1998	£ 120,000

Works repairing the erosion at the toe of the Middle Level Barrier Bank continued this year using compacted clay topped with imported turf. This technique has proved effective in previous years in providing an erosion resistant toe to the Barrier Bank and also a surface acceptable for environmental and agricultural interests.

The erosion repair works in 1997 were carried out by J.Breheny Construction.It concludes the current phase of work although survey and monitoring of the banks , particularly in light of the Easter Floods, will be carried out in 1998.

WELCHES DAM PUMPING STATION
Project Number 11042

Approved Estimated Cost	£ 227,000
Expenditure in 1997/98	£ 85,300
Total expenditure to 31 March 1998	£ 85,300

The works involve the replacement of one of the two existing engines with a new diesel unit, link up the operation of Welney Gate and include for the installation of an automatic weedscreen. Two separate contracts have been awarded to complete the installation by the 1st October 1998. Allen Power Engineering Ltd of Bedford and associated sub-contractors have commenced work on the engine removal and replacement, whilst the new weedscreen is being provided by Middlemass Lord of March. Due to the need for running of both existing pumps following the Easter Floods, the main contractor was unable to commence work on site until the middle of May. It is not,however, anticipated that this will delay commissioning of the new engine.

HUNSTANTON AND HEACHAM STRATEGY
Project Number 12058

Approved Estimated Cost	£ 85,000
Expenditure in 1997/98	£ 11,000
Total expenditure to 31 March 1998	£ 85,000

In August 1997 Posford Duvivier were appointed on a five year commission to appraise, design, supervise construction and assist in the promotion and implementation of the strategy. The preferred strategic options include for both selective hard defence improvements and beach recharge .There are three main phases of the £10.5 million strategy which will be funded over five financial years commencing in September 1998.

(i) Snettisham / Heacham Dam / Heacham North Beach - 1.8 km of flexible revetment and concrete stepwork.
(ii) Heacham and north of Snettisham Scalp - 2.2 km of beach nourishment.
(iii) Hunstanton South Beach - 0.6km of improvements to the hard defences.

The Strategy was submitted to MAFF in May 1997, but has not yet received approval.

SNETTISHAM HARD DEFENCES
Project Number 12074

Approved Estimated Cost	£ 1,371,00
Expenditure in 1997/98	£ 40,000
Total expenditure to 31 March 1998	£ 40,000

This part of the strategy is due to commence works on site in September 1998. The existing defences consist of sand/gravel banks with unprotected crest and backslopes and currently have a 1 in 50 year standard which is significantly below the 1 in 100 year indicative standard for this coastline. The new works will provide concrete block revetment to 900m at two locations.

HEACHAM HARD DEFENCES
Project Number 12075

Approved Estimated Cost	£ 1,079,000
Expenditure in 1997/98	£ 47,000
Total expenditure to 31 March 1998	£ 47,000

Due to the high amenity value of this element of the strategy it is important that works commence over the winter period and are completed by April 1999. The existing defences consist of a flexible concrete revetment facing to a sand /gravel bank with an unprotected crest and backslope. The current standard of 1 in 20 will be improved to 1 in 100 year standard at an estimated cost of £980k.

HEACHAM/SNETTISHAM BEACH NOURISHMENT
Project Number 12077

Approved Estimated Cost	£ 3,940,000
Expenditure in 1997/98	£ 85,000
Total expenditure to 31 March 1998	£ 85,000

The modelling of sediment transportation by HR Wallingford has determined the grain size, distribution and beach profile for the future nourishment. It is anticipated that 145,000m3 will be placed at Heacham and 70,000m3 at Snettisham. The works are expected to be under construction by June 1999.

RIVER NAR IMPROVEMENTS
Project Number 112216

Approved Estimated Cost	£ 3,613,000
Expenditure in 1997/98	£ 10,000
Total expenditure to 31 March 1998	£ 99,000

The feasibility study presented by Binnies in February 1997 recommends a scheme involving the diversion of floodwater via a new cut into the Relief Channel and to undertake extensive bank strengthening. As the the works are primarily for improvements to rural defences,the assessed MAFF priority score for the comprehensive scheme is only 16 and as such would be difficult to progress. However a reduced scheme with a diversion channel is under consideration and Posfords have been engaged to independently review the feasibility and the particularly the economics. It is hoped that works could be progressed during financial year 1999/00.

WASH RIVER OUTFALL STRATEGIC STUDY
Project Number 16010

Approved Estimated Cost	£ 62,500
Expenditure in 1997/98	£ 20,000
Total expenditure to 31 March 1998	£ 30,000

The final report of the River Gt.Ouse Strategy was approved by the Agency in May 1997.The preferred strategic option recommends the following:-

1. Maintain the West and East Training Walls
2. Dredging at sluices,outfalls and removal of upstream shoals.
3. Denver automation and enhanced fluvial flushing.

The strategy was submitted to MAFF in July 1997, but has not yet received approval.

GT.OUSE TRAINING WALL (WEST)
Project Number 16111

Approved Estimated Cost	£ 430,000
Expenditure in 1997/98	£ 100,000
Total expenditure to 31 March 1998	£ 100,000

The detailed appraisal has identified a need for selective strengthening and is progressing through design to an anticipated construction during the early part of 1999.

GT.OUSE DENVER OPERATIONAL REVIEW
Project Number 16112

Approved Estimated Cost	£ 706,000
Expenditure in 1997/98	£ 52,000
Total expenditure to 31 March 1998	£ 52,000

An Interim Review has identified a number of feasible options which might improve flows through Denver Sluice and alleviate problems due to siltation. These recommended actions are being taken through the detailed appraisal process and consist of:-

Action A - Continue present practice
Action B - Operate with a higher upstream water level at Denver
Action C1 - Retain water in the Washes giving preference to Denver discharge
Action C2 - Additional pumping from the Washes
Action D - Dredging in the Tidal River and disposal to land
Action E1- Improved flow gauging at Denver Sluice
Action E2 - Possible closure of the Big Eye at Denver

ANGLIAN REGION TELEMETRY SCHEME PHASE 4
Project Number 19034

Approved Estimated Cost	£	140,000
Expenditure in 1997/98	£	16,000
Total expenditure to 31 March 1998	£	16,000

The progression of the construction of flow gauging stations in Gt.Ouse has been delayed because of a potential use of the site on the Clipstone Brook as a flood storage area. Until the deliberations of the Leighton Buzzard scheme are concluded, commencement of construction has been put on hold. However detailed design on the other sites at Sappiston and the River Ousel has continued so that a submission can be made to MAFF in June for construction to commence in August 1998.

FISHER FLEET EROSION
Project No. 12045

Approved Cost	£1,477,405
Expenditure 1997/8	£109,851
Total Expenditure to 31.3.98	£1,544,682

Work of this scheme was substantially completed in May 1995 however a claim for £1.23m from the contractor remains in dispute. The Engineer to contact has made his CL66. decision and considers that no further monies are due to the contractor. The contractor however considers that his claim is justified and is therefore embarking on arbitration/conciliation procedures as provided for within the contract.

The Agency's consultant's Halcrows have completed their report on the new defence and concluded that urgent remedial works to the value of £450K are required.

The Agency has continued to take legal advice, and is acting upon this.

Additional approvals to the over expenditure are being sought.

HOUGHTON STRUCTURES
Project No 12206

Approved Estimated Cost	£52.0k
Expenditure 1996/7	£12.5k
Total Expenditure to 31.03.97	£18.2k

One of the structures at Houghton, Weir No 4. (Stone Gull Weir) failed last year and a temporary clay bund was installed as an emergency procedure to maintain upstream water levels.

The weir was subsequently demolished and a new weir constructed last year with multi-functional funding. Total cost of this work was £38k.and this weir is no longer part of the outstanding scheme.

With regard to the remaining 4 weirs the following work has been undertaken to date:-

Consultants Feasibility and Design Report Complete
Consultants Benefit Assessment Report Complete
Water Level Management Plan (WLMP's) Complete

Work currently in hand:-

Consultees to WLMP's signing up to their agreement.
MAFF Grant Aid applicaton being finalised for submission in June 1998.
Agency approval being sought - June 1998.

Current estimated scheme cost is £356k inc. salaries and fees.

HUNSTANTON/HEACHAM BEACH MANAGEMENT
Project No 12067

Approved cost	£(part of strategy)
Expenditure during 1997/8	£60,106-00
Total Expenditure to 31/3/98	£60,106-00

In accordance with the 1997 strategy for the Hunstanton/Heacham sea defences, beach material was again transported from the beach at Snetisham Scalp and moved northwards to those areas where beach levels had been depleted.

A total of 9500m3 was transported using hired plant supervised by the Agency Central Area Direct Services Group work force based at Kings Lynn. An application to MAFF for grant aid was submitted.

TIDAL RIVER MATTRESSING PART T1
Project No 12150

Approved Cost	£480,000
Expenditure during 1997/8	£154,638
Total Expenditure to 31/3/98	£286,718

Work on this part of the scheme was successfully completed by the Agency Direct Services Group.

MAINTENANCE AND OPERATIONAL WORKS

During the year an average of 71 operatives from the Emergency Workforce were employed directly on flood defence maintenance operations. These were supported by Central Workshops and by plant hire and other sub-contractors.

The expenditure on maintenance was as follows:-

	1997/98
	£K
Dredging 745.4 km on inland/tidal rivers	274
Banks and embankments - grasscutting, repairs and vermin control 1192.6	543
Structures - routine periodic maintenance to all structures, major services and scheduled repairs as required	399
Weed control 684.8 completed	509
Obstructions and Pioneer Clearance- Removal of fallen trees, clearance and accumulated debris.	200
Pumping Stations - Maintaining and Operating	48
Sea Defences/Tidal Waters	566
Other Works (including surveys)	296
Emergency Works	-
Contributions to Internal Drainage Boards relating to Highland Water	649
TOTAL	3484

CONSERVATION

RIVER CORRIDOR SURVEYS 1997/98

To meet the Agency's statutory conservation duties and strategic objectives it is essential to use effective methods of describing, classifying and monitoring the conservation resource. Surveys are essential if the Agency is to fulfil its statutory duties to further conservation. They highlight features which need protecting and identify opportunities to rehabilitate and enhance degraded habitats, river corridors and species.

River corridor survey programmes ensure that the Agency posses up to date river conservation data. It enables objective conservation assessments of rivers to be made and allows targets to be set for their restoration, enhancement and conservation.

National Vegetation Classification

A total of 360 km of main river were surveyed using the National Vegetation Classification Phase 1 surveys.

These surveys mapped out the areas of conservation interest along all river corridors and also recommend any areas of particular interest that may need more detailed surveys at a later date. The data collected will be used for assessing the potential impact of any routine maintenance work undertaken, with particular reference to depositing of spoil.

Water Vole Surveys

Water voles are a Biodiversity Action Plan species due to their declining populations. Surveys were undertaken throughout Central Area in collaboration with local Wildlife Trusts. Information provided by these surveys can be used for river management purposes, highlighting those areas where voles are present and where maintenance and enhancement is of prime importance to help halt the decline of this once common mammal.

BRECKS RIVER RESTORATION PROJECT

Past land drainage and management practices have resulted in ecologically degraded rivers within the Brecklands, much of which is now an Environmentally Sensitive Area (ESA).

The Brecklands lie within the Ely Ouse catchment of which the Little Ouse forms a part. The objective of the project is to restore the conservation value of the river. This will be achieved by restoring former meanders and raising water levels thus enhancing both instream and wider river corridor habitats.

Unfortunately, due to the Easter floods, the upstream weir was washed away. Construction of a replacement weir commenced in June this year.

MAINTENANCE DREDGING

The summer of 1997 saw the successful culmination of the maintenance dredge of the River Tove from Cosgrove to Capenham Bridge, a total of 19 km, which had taken two and a half years to complete. The River Tove is a meandering channel which rises upstream of Towcester and joins the River Gt Ouse north of Milton Keynes. It features many 'glides' with a number of riffles and pools along its length. The river flows through mainly semi-improved or improved pasture with some arable land.

The Rivers Cam, 100 Ft, Lark, Ely Ouse and Wissey, along with the Tidal River and Lakenheath Lode were also dredged during 1997 to a total of 16.1 km.

Great care was taken to minimise the impact of the dredging works and to ensure that the diversity of interests in this area was not compromised. A successful outcome was achieved through a wide consultation process and continued dialogue with Flood Defence, landowners, District Councils, Wildlife Trusts and English Nature both before and during the works.

The River Tove - A Rich Wildlife Habitat requiring a Sensitive, Conservation led approach to Maintenance Dredging Work

CONTINUATION OF MANAGEMENT OF WILLOWS ON THE RIVER GT OUSE

The practice of pollarding willows has been largely abandoned by landowners in recent years, resulting in mature and unmanaged trees vulnerable to wind and ice damage. The second year of this project aims to manage trees in support of the Ouse Valley Willows Strategy

(supported by Huntingdonshire District Council, the local Wildlife Trust and as part of the Ouse Valley Countryside Partnership). The pollarded willows will greatly benefit wildlife as well as obviating tree collapse risks to flood defence and navigation.

Willow - New Growth on a Recent Pollard

HYDROLOGICAL REPORT 1 APRIL 1997 TO 31 MARCH 1998

1. Precipitation

Rainfall for the last twelve months was 593mm (97% of the LTA) reflecting a break in the drought of the previous 2 years. See Table 1.1. Six of the twelve months had below average rainfall, with June 1997 precipitation above the historical (1961-1990) maximum for June and February 1998 precipitation below the historical (1961-1997) minimum for February. June 1997 saw the highest rainfall with 127mm (235% of LTA for June).

Table 1.1 Catchment Rainfall Compared to Average Rainfall

MONTH	YEAR	RAINFALL (mm)	LONG TERM AVERAGE RAINFALL (mm)
APRIL	1997	16	46
MAY	1997	49	52
JUNE	1997	127	54
JULY	1997	37	51
AUGUST	1997	49	56
SEPTEMBER	1997	17	50
OCTOBER	1997	53	53
NOVEMBER	1997	58	57
DECEMBER	1997	68	56
JANUARY	1998	60	53
FEBRUARY	1998	7	38
MARCH	1998	52	46
	TOTALS	593	612

A large Soil Moisture Deficit (SMD) was evident going into spring 1997 when the historical (1961-1995) April and May maxima were exceeded. The annual maximum occurred in September 1997, which exceeded the historical (1961-1995) maximum. The historical (1961-1997) maximum was again exceeded in February 1998.The average SMD was exceeded in each month.

2. River Flows

River flows were below average for most of the twelve month period. Although flows suffered as a consequence of the low groundwater levels and high soil moisture deficits, only the Ivel and Little Ouse fell below the historical minima in April and May. Flows peaked in January 1998 when the average flow was exceeded at several sites reflecting the slightly above average rainfall in the previous months.

3. Groundwater Levels

Groundwater levels have remained below the long term average throughout the period. Recharge of groundwaters was poor in the winter/spring 1997 due to the continued below average rainfall. Recharge of the Lower Greensand around Bedfordshire (Furzenhall Farm) was negligible, with water levels dropping below historical minima throughout most months. The Chalk water levels remained low but above the historical minima levels in the Hertfordshire and Cambridgeshire area (Chesterford Park), but in Norfolk (Washpit Farm) recharge during winter 1997 brought water levels to near average by the end of March.

4. Flooding

a) Fluvial

In spite of the heavy rainfall in June no flooding was recorded.

On the 18 August 76mm of rainfall fell in 2 hours at Brampton resulting in localised flooding of roads and property.

A yellow alert was issued on the 1 December for the Hundred Foot Washes.

During December and January several flood events occurred due to the high rainfall that was experienced. Tributaries mostly remained within their banks, whilst flows in the Bedford Ouse spilled onto the floodplain in several places. A number of yellow and amber alerts were issued throughout this period and a navigation closure was put in place between Bedford and Earith on the Bedford Ouse.

Flooding during the second week of March again resulted in a navigation closure between Offord and Earith and several yellow alerts.

b) Tidal

There were three tidal events in September which resulted in yellow alerts being issued (17th, 18th and 19th September), although no property flooding occurred. These events were followed by three tidal yellow alerts during the last two days of February and one on the 29th March.

Central Area Key Hydrometric Data

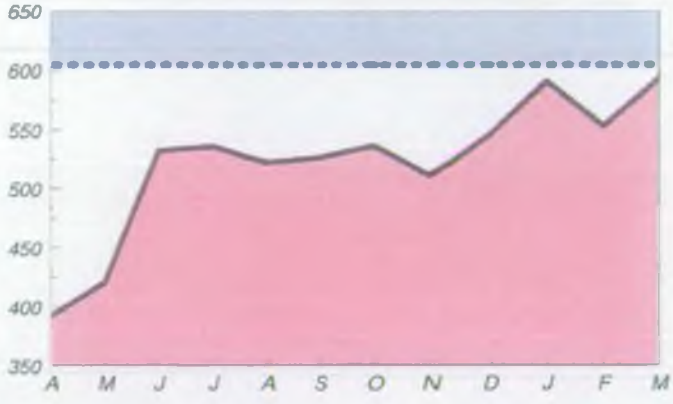
APRIL 1997 TO MARCH 1998

Rainfall surplus, SMD and GW levels are for end of given month.

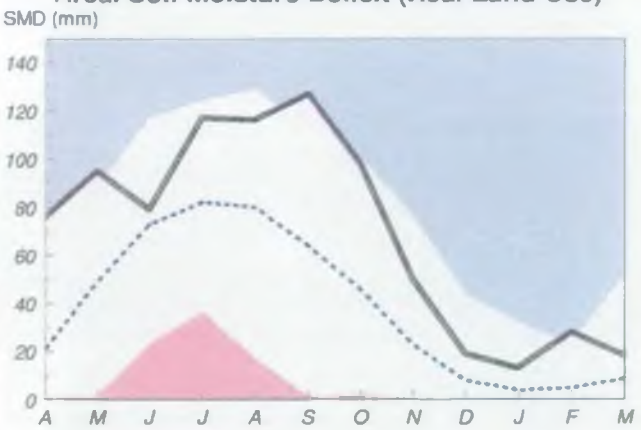
Monthly Areal Average Rainfall

Monthly Rainfall Surplus/Deficit

Dotted line is annual average. Solid line is total for last 12 months

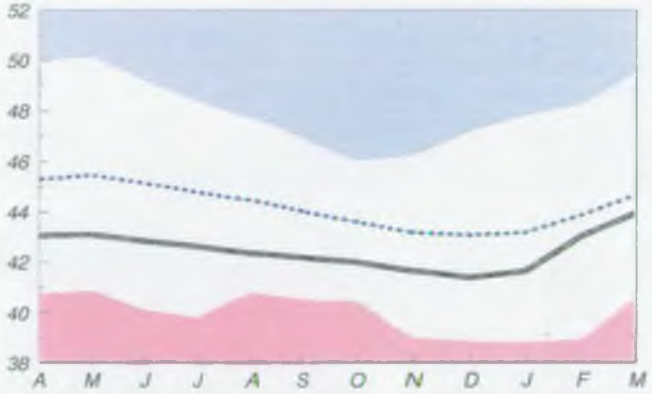


Areal Soil Moisture Deficit (Real Land Use)



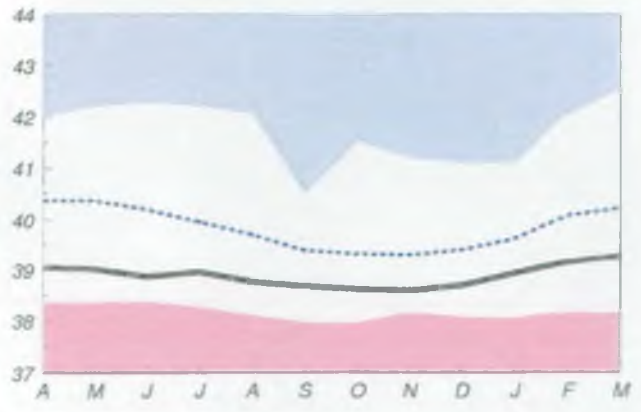
Chalk Groundwater levels at TF81/10 Washpit Farm

TF 813 195. Levels in mAOD (GL 80.38)



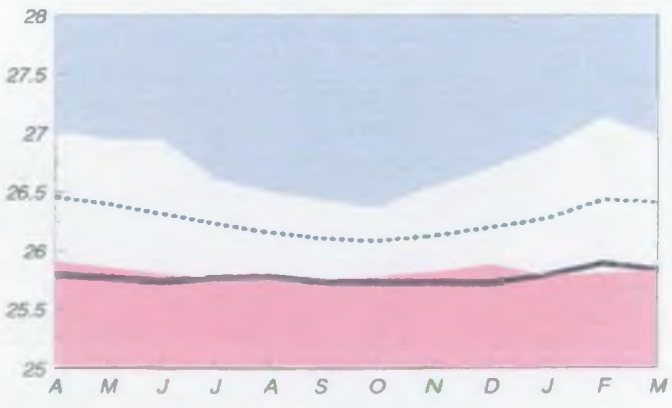
Chalk Groundwater Levels at TL54/19 Chesterford Park

TL 435 423. Levels in mAOD (GL 107.85)



Lower Greensand Levels at TL14/1 Furzenhall Farm

TL 193 468. Levels in mAOD (GL 28.07)



KEY

CURRENT VALUES

LONG TERM AVE.

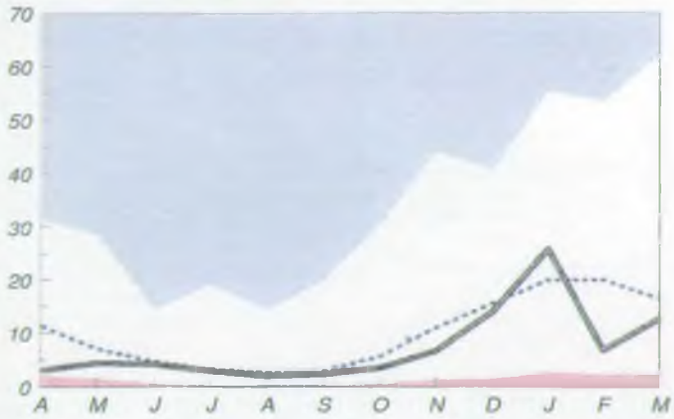
HISTORICAL MAX.

HISTORICAL MIN.

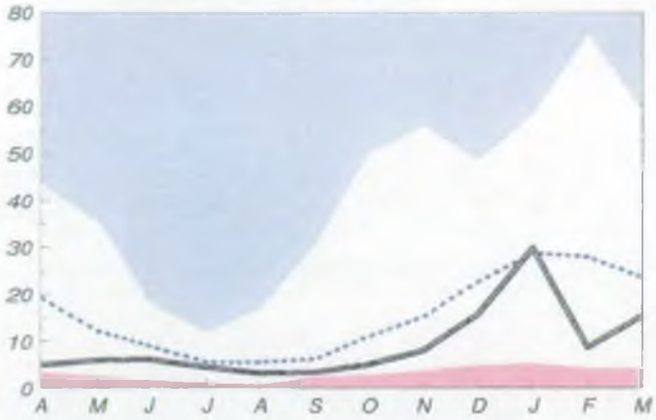
Central Area Key Hydrometric Data
APRIL 1997 TO MARCH 1998

Monthly Mean River Flows
All flows in cumecs

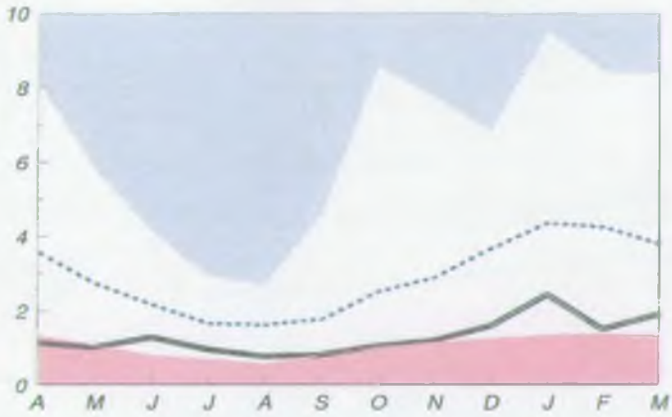
Bedford Ouse Flow at Bedford



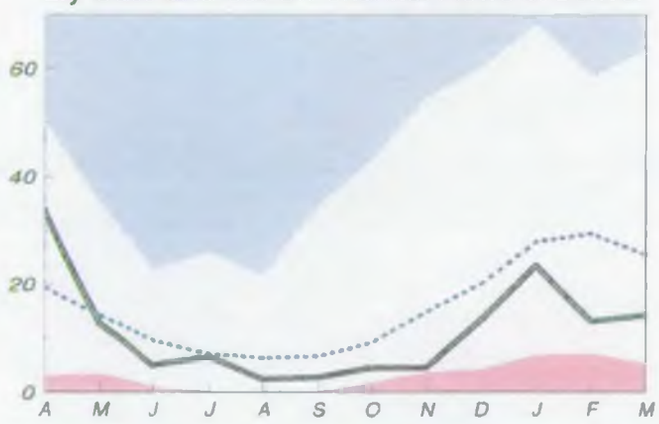
Bedford Ouse Flow (Gross) at Offord



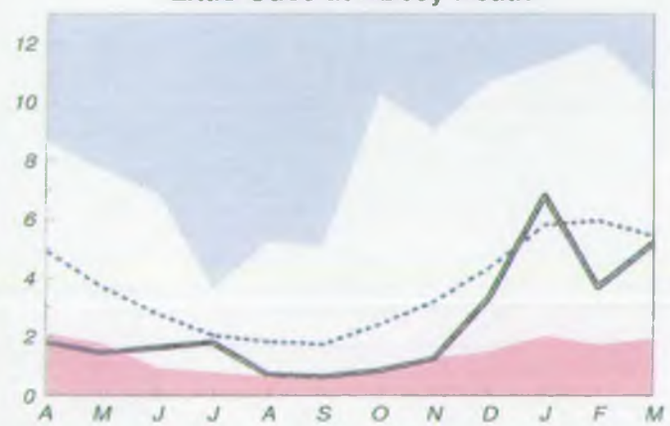
Ivel Flow at Blunham



Ely Ouse and Cut Off Channel Flows at Denver



Little Ouse at Abbey Heath



KEY

- CURRENT VALUES
- LONG TERM AVE.
- HISTORICAL MAX.
- HISTORICAL MIN.

GREAT OUSE LOCAL FLOOD DEFENCE COMMITTEE

DRAFT FINAL ACCOUNTS 1997/1998

FINANCE REPORT

The report, attached as Appendix A, is presented as an income and expenditure account for 1997/98.

Actual figures for 1996/97 are shown for comparison purposes, together with the approved budget for 1997/98, a revised budget for 1997/98, actual (draft) figures for 1997/98 and variances, ie the revised budget versus actual.

Brief notes explaining the more significant variances are set out below:-

Line No.	Comments
7	There were small variances against several income budgets. Most significant was the increase in interest, due to rates rising steadily throughout the year, linked to a robust cash management regime.
8 - 9	Overall maintenance expenditure, at £2,540k, was within 2% of the revised budget, although there was some variation between fluvial and tidal elements.
10	Other operational costs were in line with the budget. Main items of expenditure during the year were: a) Contributions to Internal Drainage Boards relating to highland water - £649k b) Flood warning (excluding salaries) - £50k c) Section 105 Surveys - £131k d) River Corridor Surveys - £35k
11 - 13	Operational Support costs, at £2,448k, varied from the budget by approximately 1%.
14	The net cost of capital expenditure was £3,225k, some £94k or 2.8% less than budget. A further £200k of Grant Earning Ceiling was allocated to the Committee late in the year, bringing the total to £4,050k, supporting a grant eligible programme of £4,387k.
20	Income for 1997/98 totalled £8.786m and expenditure £9.209m, resulting in a reduction to the Committees balances of £423k and a final balance of £943k carried forward into 1998/99. This is £70k above the budget and represents approximately 8.5% of gross expenditure.

APPENDIX A

GREAT OUSE LOCAL FLOOD DEFENCE COMMITTEE

DRAFT FINAL ACCOUNTS 1997/1998

(£000

LINE NO.		ACTUAL 1996/97	APPROVED BUDGET 1997/98	REVISED BUDGET 1997/98	ACTUAL 1997/98	VARIANCE
1	County Council Levies	5748	5860	5860	5860	0
2	Int. Drainage Board Precepts	1622	1707	1707	1707	0
3	General Drainage Charges	603	632	612	611	-1
4	Other	271	330	250	245	-5
5	Interest - on Cash flow	193	205	255	294	39
6	- Section 47 balances	50	50	65	69	4
7	TOTAL INCOME	8487	8784	8749	8786	37
8	Maintenance - Fluvial Main River	2126	2168	2144	1974	170
9	- Tidal/Sea Defences	316	316	359	566	-207
10	Other Operational Costs	895	960	941	944	-3
11	Operational Support - Regional	1865	1888	1888	1905	-17
12	- National	243	242	242	243	-1
13	- NIS	281	281	289	300	-11
14	Revenue Contribution to Capital	2276	3728	3319	3225	94
15	Working Capital	23	--	60	52	8
16	TOTAL EXPENDITURE	8025	9583	9242	9209	33
17	**SURPLUS/DEFICIT**	462	-799	-493	-423	70
	RESERVE					
18	Section 47 Balances b/fwd	904	1318	1366	1366	0
19	Surplus/Deficit	462	(799)	(493)	(423)	70
20	Section 47 Balances c/fwd	1366	519	873	943	70
21	Grant Aided Works - Fluvial Main River	996	1817	1690	1531	159
22	- Tidal/Sea Defences	2202	2506	2700	2856	-156
23	Non Grant Aided Works	148	100	100	128	-28
24	Design/Supervision	680	650	650	635	15
25	TOTAL EXPENDITURE	4026	5073	5140	5150	-10
26	MAFF Grant	1750	1345	1821	1925	104
27	Contributions	--	--	--	--	--
28	**REVENUE CONTRIBUTION TO CAPITAL**	2276	3728	3319	3225	94
29	Grant Earning Ceiling	2600	2900	3850	4050	200

FINANCE REPORT
CAPITAL EXPENDITURE ANALYSIS 1997/98

SCHEME REFERENCE	SCHEME DESCRIPTION	EXPENDITURE (£'000)
13077	A G Wright Sluice	32
19012	ARTS 2)	
19023	ARTS 3)	81
19034	ARTS 4)	
11060 -	Ely Ouse Flood Defences,	
11068	Unit 1-9	405
12212	Kimbolton	13
11334	Middle Level Erosion Protection	109
11042	Welches Dam Pumping Station	75
11047	Welmore Lake Sluice	3,247
Various	King's Lynn to Denver Flood Protection	31
12160	Tidal River Matressing	149
16111	Great Ouse Training Walls	56
Various	Hunstanton/Heacham Beach Works	99
12074	Snettisham Hard Defences	12
12075	Heacham Hard Defences	7
12077	Heacham/Snettisham Beach Nourishment	58
18894	Shoreline Management Plan	14
TOTAL GRANT ELIGIBLE		4,388
11034	Thetford Sluice	45
11059	Bridge Replacement	14
13061	Tempsford Lock	15
13085	Cut-Off Channel	13
13084	Safety Works	40
TOTAL NON GRANT ELIGIBLE		127
DESIGN/SUPERVISION	- IN HOUSE	212
	- CONSULTANTS	423
TOTAL CAPITAL EXPENDITURE		5,150