

Great Ouse Local Flood Defence Committee

ANNUAL REPORT

1998 - 1999



Aerial Photograph of Alconbury Weston During the 1998 Easter Floods

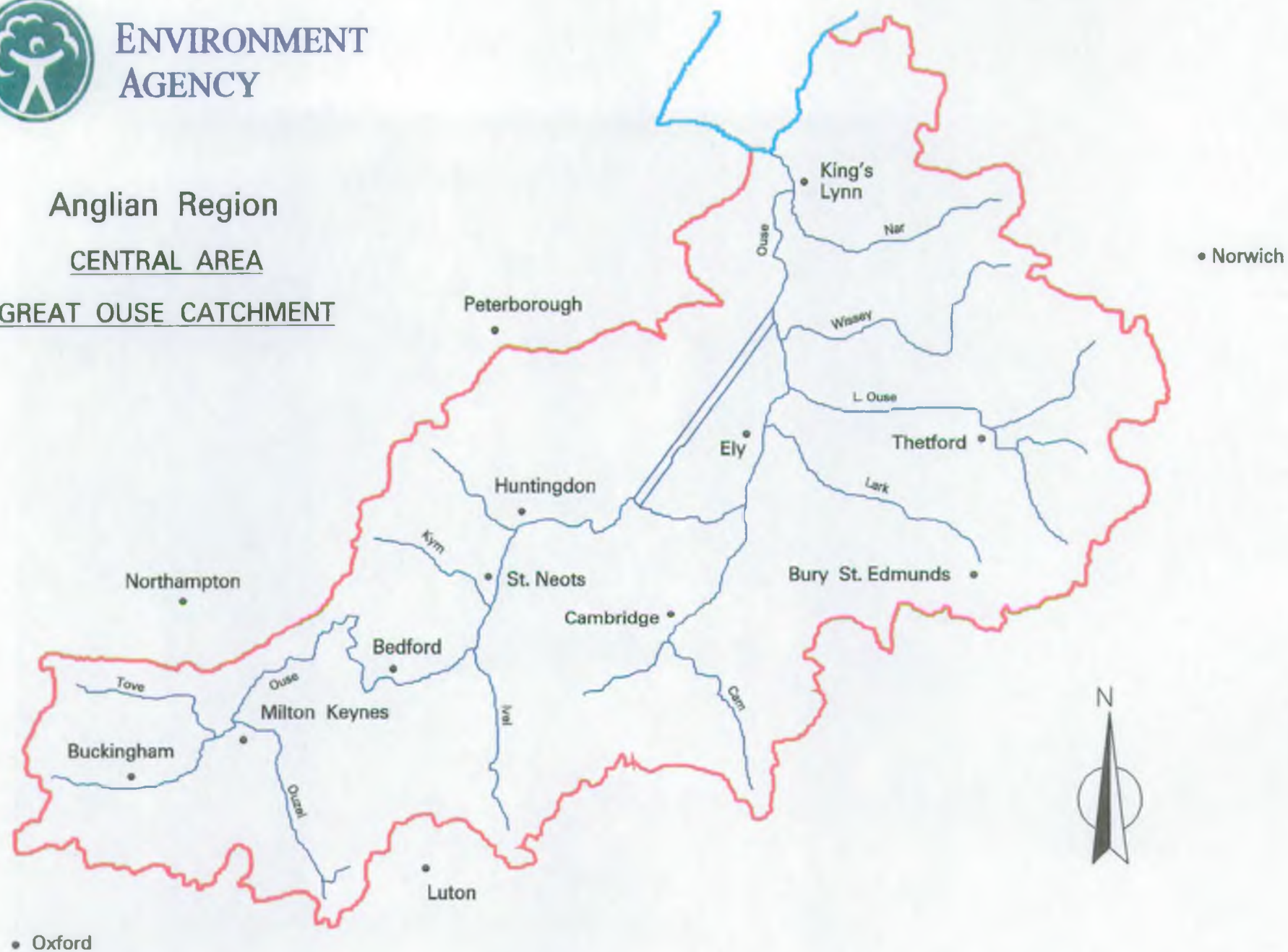


ENVIRONMENT
AGENCY



CENTRAL AREA

GREAT OUSE CATCHMENT



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~~11/1/02~~

GREAT OUSE LOCAL FLOOD DEFENCE COMMITTEE

LIST OF MEMBERS

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(AS AT 31ST MARCH 1999)

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PETER KITE

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REGIONAL ENGINEERING MANAGER

GORDON HEALD

CENTRAL AREA

AREA MANAGER

KEITH STONELL

WATER RESOURCES MANAGER

PAT SONES

FISHERIES, ECOLOGY AND RECREATION MANAGER

DEBBIE JONES

AREA FLOOD DEFENCE MANAGER

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DAVID GILLET

TEAM LEADER OPERATIONS (SOUTH)

DAVID COTTERELL

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TEAM LEADER REGULATIONS

ANTHONY CLAYTON

TEAM LEADER FLOOD WARNING

BRYONY MAY

Great Ouse Local Flood Defence Committee

ANNUAL REPORT

1998 - 1999

INTRODUCTION

This year started with one of the worst floods to be experienced since the great Flood of 1947. Over the 1998 Easter bank holiday weekend over 3000 properties were flooded throughout Central and Eastern England. In the Gt. Ouse catchment alone some 600 properties were inundated. The publication of the report, following the Review of the Easter Flood by Mr Peter Bye, former Chief Executive of Suffolk County Council, lead to the production of an Action Plan to implement the recommendations made in the report. This Action Plan contains some 85 actions covering improvements to flood forecasting, flood warning, flood response and asset management. Many of the deadlines in the action plan are extremely tight and the workload has had a major impact on all of us involved in flood defence.

Media and public attention focused on the Agency's lead role for flood warning both during and after the Easter event. As a result of this interest and following a number of public meetings, self help groups have been set up in a number of Parishes. This enables the Agency to issue advice and warnings to Parish Councillors or nominated volunteers directly into the communities at risk. At the same time, work to increase the use of the Automatic Voice Messaging (AVM) system and develop improved communications with County Emergency Planners and the emergency services has been ongoing.

As a result of our experience after the Easter Flood, pre-feasibility studies have been undertaken at eleven locations throughout the Gt. Ouse catchment. These studies look at the numbers of properties in the flood risk areas, current standards of protection and options/costs for flood defence improvements. This information will enable us to decide whether to proceed to a full feasibility study at any of the locations and identify suitable schemes in the Long Term Plan.

Although the aftermath of the flood has dominated our year, it is not the only matter to impact on the flood defence function. The report of the Agricultural Select Committee Review of Flood Defence was published in August '98. The government undertook follow up action in areas of constitutional arrangements, funding arrangements, flood warning, development control and flood risk information as well as environmental issues. The full impact of many of these issues on flood defence still remains to be seen.

Work on the reconstruction of Welmore Lake Sluice has continued to progress to both time and cost targets. The project is expected to be completed in September this year and we can look forward to a grand opening ceremony in spring 2000.

The much improved winter flows in both 1997/8 and 1998/9 have lead to an easing of the problems associated with siltation in the Tidal river. However, the siltation project final report is now imminent and an Ouse Washes Habitat Protection and Funding Project group has been set up to review the recommendations. This Project Group is made up of a membership drawn from interested parties representing conservation, navigation and land drainage as well as the Agency.

One major disappointment this year is that we have not yet been able to secure MAFF approval for the works proposed to the Hunstanton to Snettisham frontage. However, the sucessful outcome of the Fisherfleet claim enabled us to maximise grant aid on this project and achieve an overall GEC expenditure of £2.7 million out of a planned £3.0 million.

NIGEL WOONTON

Area Flood Defence Manager (Central)

EASTER FLOOD 1998

Heavy rainfall during Thursday 9 April 1998 into Good Friday, 10 April 1998 led to the highest river levels seen in the River Great Ouse since the historic floods of 1947. These high river levels caused flooding to a total of 689 buildings of which 519 were residential properties.

The worst of the flooding was seen alongside the River Great Ouse in Northamptonshire, Buckinghamshire, Milton Keynes, Bedfordshire and Cambridgeshire. Properties beside the Alconbury Brook, the River Kym and other tributaries of the River Great Ouse were also affected. Of the properties affected all but one were located upstream of Earith on the River Great Ouse and its tributaries.

In addition to property flooding, a number of major and minor roads were rendered impassable and large areas of farmland (approximately 9000 hectares), parkland and gardens were inundated. There was also disruption to electricity and gas services.

The Area's flood warning procedures were activated with the opening of the Control Room at Brampton to carry out monitoring, forecasting and dissemination of warnings, involving in total 45 staff over the Easter Period. Flood defence operations staff were deployed to keep the rivers running freely and to check the operation and condition of flood defences. In addition, assistance was given to those affected where resources were available to do so.

A total of 34 flood warnings were issued over the period including 11 Red, 19 Amber and 4 Yellow.

Flooding to property affected:

- 519 Houses
- 18 Garages/outbuildings
- 62 Retail and industrial, public buildings/schools
- 4 Caravan park facilities buildings
- Approx. 71 caravans/chalets
- 9 other buildings associated with recreation
- 6 Marinas

The town most affected was Newport Pagnell in Milton Keynes where 78 residential properties and one non-residential property were flooded. The majority of these were flooded in Lakes Lane from the River Great Ouse.

In addition, Buckingham, Towcester, Cosgrove, Stony Stratford, Clapham, Bedford, St. Neots, Riseley, Buckden, Alconbury, Alconbury Weston, Hemingford Abbots/Grey and St. Ives also experienced significant flooding.

EASTER 1998 FLOOD ACTION PLAN

Following the publication of the Final Assessment of the Easter 1998 Floods by the independent review team, the Agency's Director of Operations and Director of Water Management set up an Easter Floods Action Group.

The recommendations from the Final assessment of the Independent Review and the six internal national reviews have now been integrated into a single action plan. Anglian Region set up a Regional team to manage the regional implementation of actions through Area teams.

Elliot Morley, the Minister of Fisheries and the Countryside, summarised all the recommendations in a number of priority areas in a statement to the House of Commons and in a letter to Lord De Ramsey. Those priority areas are:-

- *Adoption of a systems approach to flood and coastal defence.*
- *Flood forecasting and warning*
- *Emergency response*
- *Standards of defence*
- *Management and skills*
- *Creation of a national flood forecasting and warning service.*

GOVERNMENT PRIORITIES

The Government's objective is an improved, seamless and integrated service. The Agency has been asked to carry out a thorough review of the whole system to ensure that it is focused to deliver the required service, that management arrangements make this possible and that there are clear lines of accountability and responsibility.

AGENCY ACTION PLAN

The Agency's Action Plan was signed off by the Minister on 17 November 1998 and was published on 25 November 1998.

The detailed internal version of the Action Plan covers 85 actions. Of these 28 were programmed for implementation by the end of 1998, a further 27 are to be implemented by Easter 1999, a further 21 by September 1999 and the remaining 9 by April 2000.

The majority of actions due for implementation by the end of 1998 were completed on target.

Together with the 85 actions there was a need to accelerate some of the existing flood defence initiatives, particularly Asset Surveys, Flood Warning Improvements and the Anglian Flow Forecasting and Modelling System. These initiatives and the Section 105 Flood Risk Maps and Sea Defence Survey are all inter-dependent.

PROJECT MANAGEMENT

A Project board was formed to oversee the work, giving direction on overall objectives and priorities, quality reviewing the project plan and outputs and monitoring progress. The

Board is chaired by the Regional Flood Defence Manager, as Project Executive with overall responsibility for the project, and consists of the Area Flood Defence Managers, the Central Area Direct Services Manager, the Senior Planner (Emergencies) and the Regional Public Relations Manager.

A Regional Project Team is responsible for implementing the plan actions through Area based teams of staff. The Eastern Area Flood Defence Manager, John Hesp, has been brought "off.line" as Regional Project Manager, responsible for leading the Regional Project Team and for reporting to the Project Board. This Regional Team consists of a representative from each of the 3 Area offices, leading the Area based teams.

CAPITAL WORKS

OUSE WASHES FLOOD CONTROL STRATEGY

Project Number 11043

Estimated Cost	£326,000
Expenditure in 1998/99	£Nil
Total expenditure to 31 March 1999	£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 Ouse Washes Management Group with the objective of seeking integrated solutions to both flood defence and environmental management of the Washes. The Environment Agency takes an active involvement 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.

DIVERSION OF WATER TO THE OLD WEST RIVER

Project Number 11048

Estimated Cost	£800,000
Expenditure in 1998/99	£ 20,000
Total expenditure to 31 March 1999	£ 40,000

The 1995 Strategy identified the possibility of a new structure at Hermitage Lock to divert up to 5m³/sec in the Old West and so reduce the frequency of Summer Flooding in the Washes. It is clear from an initial review that the benefits from such a diversion are small and unlikely to have any significant impact in reducing the incidence of summer flooding of the Washes. The impact of raising the drawmark at Earith is linked to any possible diversion of floodwater away from the Washes, and will be formally reported towards the end of 1999.

WELMORE LAKE SLUICE RECONSTRUCTION

Project Number 11047

Estimated Cost	£5,201,000
Expenditure in 1998/99	£1,441,000
Total expenditure to 31 March 1999	£4,898,000

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 Waterlink UK (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, tidal mitre gates to exclude saline water from the Ouse Washes and vertical lift 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. Each pier of the new sluice contains land drainage pumps that will enable removal of water from the Ouse Washes when tide locked and additional facility has been built into the structure that will allow the provision of further temporary pumping up to a total capacity of 3.2 m³/sec.

The new sluice will be fully operational in September 1999.

ELY OUSE FLOOD DEFENCE STRATEGY

Project Number 11005 and 11006

Estimated Cost	£80,000
Expenditure in 1998/99	£ 6,500
Total expenditure to 31 March 1999	£ 9,000

The original strategy was completed in 1994 / 95 and subsequently implemented during 1996 and 1997. Since then, the Agency has carried out regular environmental monitoring so that it can measure the long term flood defence effectiveness of the berm and bank improvements and their affect on the environment and navigation. In accordance with MAFF guidelines, a review of the Strategy will be commenced towards the end of 1999.

WELCHES DAM PUMPING STATION

Project Number 11042

Estimated Cost	£227,000
Expenditure in 1998/99	£172,000
Total expenditure to 31 March 1999	£227,000

The works involved the replacement of one of the two existing engines with a new diesel unit, linked to the operation of Welney Gate and the installation of an automatic weedscreen. Two separate contracts were awarded to Allen Power Engineering and Middlemass Lord, and the work will be completed and commissioned in November 1999.

HUNSTANTON AND HEACHAM STRATEGY

Project Number 12058

Estimated Cost	£85,000
Expenditure in 1998/99	£Nil
Total expenditure to 31 March 1999	£85,000

The Agency's preferred strategic option includes for both selective hard defence improvements and beach recharge to 4.6km of frontage (approximately 40% of the total frontage). There are three main phases to the £10.5 million strategy: -

1. Snettisham / Heacham Dam / Heacham North Beach - 1.8 km of flexible revetment and concrete stepwork
2. Heacham and north of Snettisham Scalp - 2.2 km of beach nourishment.
3. Hunstanton South Beach - 0.6km of improvements to the hard defences.

It is of continuing concern that MAFF are unwilling to approve the strategy. The head office of MAFF has expressed serious reservations over the benefit value of static caravans and the long-term sustainability of holding the front line defence. Until improvements are put in place the standard of the defences will continue to deteriorate and the risk of breaches become greater.

SNETTISHAM HARD DEFENCES

Project Number 12074

<i>Estimated Cost</i>	<i>£1,216,000</i>
<i>Expenditure in 1998/99</i>	<i>£ 63,000</i>
<i>Total expenditure to 31 March 1999</i>	<i>£100,000</i>

This part of the strategy was 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 would provide concrete block revetment to 900m at two locations. Without MAFF approval this phase of the works is unable to progress to construction.

HEACHAM HARD DEFENCES

Project Number 12075

<i>Estimated Cost</i>	<i>£1,054,000</i>
<i>Expenditure in 1998/99</i>	<i>£ 57,000</i>
<i>Total expenditure to 31 March 1999</i>	<i>£103,000</i>

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 would be improved to 1 in 100 year standard at an estimated cost of £980k. As with Snettisham, this phase of the strategy is unable to progress to construction without MAFF grant aid.

HEACHAM/SNETTISHAM BEACH NOURISHMENT

Project Number 12077

<i>Estimated Cost</i>	<i>£4,189,000</i>
<i>Expenditure in 1998/99</i>	<i>£ 74,000</i>
<i>Total expenditure to 31 March 1999</i>	<i>£159,000</i>

The modelling of sediment transportation by HR Wallingford has determined the grain size, distribution and beach profile for any future nourishment. It is anticipated that 145,000m³ would be placed at Heacham and 70,000m³ at Snettisham. This work had originally been planned for commencing during 1999, but without MAFF approval is unlikely to continue.

HUNSTANTON / HEACHAM BEACH RECYCLING

Project Number 12071

<i>Estimated Cost</i>	<i>£64,000</i>
<i>Expenditure in 1998/99</i>	<i>£65,000</i>
<i>Total expenditure to 31 March 1999</i>	<i>£65,000</i>

The annual beach recycling was successfully undertaken during early March by the Central

Area Direct Services Group. Whilst this work is a vital part of the beach management strategy for the frontage it is not possible to recycle sufficient material from Snettisham Scalp. Due to environmental constraints, the Agency can only move some 6000m³ and this is not enough to sustain or improve the standard of defences.

HUNSTANTON / HEACHAM BEACH SURVEYS AND ENVIRONMENTAL MONITORING

Project Number 12072 & 12073

Estimated Cost	£78,000
Expenditure in 1998/99	£87,000
Total Expenditure to 31 March 1999	£87,000

Since 1992 the Agency have undertaken beach surveys twice a year and also recorded ecological changes along the frontage. The work is grant aided by MAFF and is a necessary part of ensuring that beach material is recycled to those lengths of frontage in greatest need, and at the same time ensuring that the recovery of material has limited overall effect on the environment.

RIVER NAR IMPROVEMENTS

Project Number 12216

Estimated Cost	£3,613,000
Expenditure in 1998/99	£ 27,000
Total expenditure to 31 March 1999	£ 158,000

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. Due to concerns as to whether this project could ever achieve sufficient MAFF priority score, a review has been undertaken to see whether the works could be scaled down by providing an alternative flood storage scheme. A detailed appraisal will be presented to MAFF in July with the possibility of some works commencing during 1999/00.

WASH RIVER OUTFALL STRATEGIC STUDY

Project Number 16010

Estimated Cost	£62,500
Expenditure in 1998/99	£Nil
Total expenditure to 31 March 1999	£68,268

The final report for 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. Maximise the use of Denver Sluice and improve the fluvial flushing

Since the strategy was completed the implications of siltation and its effect on the efficient discharge of floodwater from the Ouse Washes is more fully understood. The operating rules for Denver have been updated and works to sustain the West Bank training wall are planned for autumn 1999.

GT.OUSE TRAINING WALL (WEST)

Project Number 16111

Estimated Cost	£430,000
Expenditure in 1998/99	£ 15,000
Total expenditure to 31 March 1999	£ 99,082

The detailed appraisal has identified a need for selective strengthening and an Engineer's Report has been submitted to MAFF in anticipation of works commencing in the autumn.

GT.OUSE DENVER OPERATIONAL REVIEW

Project Number 16112

Estimated Cost	£78,500
Expenditure in 1998/99	£ 8,000
Total expenditure to 31 March 1999	£68,860

A detailed appraisal has considered a number of measures, which could improve flows through and past Denver Sluice and assist in the alleviation of problems due to siltation. In summary they are: -

- *Agitation Dredging*
- *Rely on natural flows to mobilise the riverbed*
- *Operate higher water levels upstream of Denver*
- *Selective narrowing of the Tidal river*
- *Whilst it may not be possible to justify major improvements to the river regime a separate*
- *Ouse Washes Habitat Protection and Funding project has been initiated and will take account of the Siltation Strategy and the impacts of reducing flows into the Washes.*

ANGLIAN REGION TELEMETRY SCHEME PHASE 4

Project Number 19034

Estimated Cost	£142,000
Expenditure in 1998/99	£ 18,000
Total expenditure to 31 March 1999	£ 43,000

Due to difficulties in obtaining approval from the landowner to enter site, work on the Leighton Buzzard gauging station did not commence until May 1999. It is likely that the Easter Flood Action Plan will identify the need for further gauging stations and this will form an extension to the ARTS Phase 4.

NEWPORT PAGNELL F.A.S.

Project Number 12217

Estimated Cost	£478,000
Expenditure in 1998/99	£ 10,000
Total Expenditure to 31 March 1999	£ 10,000

As part of the published Easter Floods Action Plan, the Agency committed itself to reconsider the potential for improvements and whether a partial scheme could be justified at Lakes Lane. The detailed assessment is being undertaken by Halcrows (who have also been commissioned by a client consortium to re-evaluate the use of Milton Keynes Balancing Lakes) and should be reporting by late August as to the viability of a grant-aided scheme. A financial provision has been made for the possibility of some works commencing during 1999 / 00.

ALCONBURY & ALCONBURY WESTON F.A.S.

Project Number 11075

<i>Estimated Cost</i>	<i>£35,000</i>
<i>Expenditure in 1998/99</i>	<i>£25,000</i>
<i>Total Expenditure to 31 March 1999</i>	<i>£25,000</i>

At Easter 1998 over 90 properties were flooded, some to a depth of 0.8m. Flooding at this location has not been uncommon but it has always proved uneconomic, under MAFF rules, to promote improvements. However a further review has been undertaken and, whilst it is too early to recommend a positive way forward, the options under consideration are: -

- 1. Linear balancing*
- 2. Low level flood walls*
- 3. Wider channel*
- 4. Flood proofing of high risk properties*
- 5. Improved flood warning*

As it is too early to form an outcome to this review, the above costs are for design and supervision only.

LEIGHTON BUZZARD FPS

Project Number 12208

<i>Approved Cost</i>	<i>£384,000</i>
<i>Expenditure 1998/9</i>	<i>£ 14,587</i>
<i>Total Expenditure to 31.3.99</i>	<i>£ 38,098</i>

The Agency's consultant Halcrow's submitted their draft report in Jan 99. Following this it was deemed necessary to arrange further topographical survey to enable the sensitivity of the hydraulic model to be improved by additional calibration for use in the development of any options for reducing the flood risks.

HEMINGFORDS FPS

Project Number 11072

<i>Approved Cost</i>	<i>£NIL</i>
<i>Expenditure 1998/9</i>	<i>£6,500</i>
<i>Total Expenditure to 31.3.99</i>	<i>£6,500</i>

Following the Easter floods the Agency appointed consultants Posford Duvivier to undertake a study and produce a pre-feasibility report to establish whether a more detailed appraisal was warranted. The draft feasibility report was submitted to the Agency and this was revised to take into account comments

BEDFORD, KEMPSTON, CLAPHAM FPS
Project Number 11077

Approved Cost	£NIL
Expenditure 1998/9	£6,175
Total Expenditure to 31.3.99	£6,175

Following the Easter floods the Agency appointed consultants Posford Duvivier to undertake a study and produce a pre-feasibility report to establish whether a more detailed appraisal was warranted. The draft feasibility report was submitted to the Agency and this was revised to take into account comments and make three individual reports

BUCKINGHAM FPS
Project Number 11078

Approved Cost	£NIL
Expenditure 1998/9	£6,337
Total Expenditure to 31.3.99	£6,337

Following the Easter floods the Agency appointed consultants Posford Duvivier to undertake a study and produce a pre-feasibility report to establish whether a more detailed appraisal was warranted. The draft feasibility report was submitted to the Agency and this was revised to take into account comments

TOWCESTER FPS
Project Number 11079

Approved Cost	£NIL
Expenditure 1998/9	£3,872
Total Expenditure to 31.3.99	£ 388

Following the Easter floods the Agency appointed consultants Posford Duvivier to undertake a study and produce a pre-feasibility report to establish whether a more detailed appraisal was warranted. The draft feasibility report was submitted to the Agency and this was revised to take into account comments

ST. NEOTS FPS
Project Number 11080

Approved Cost	£NIL
Expenditure 1998/9	£6,154
Total Expenditure to 31.3.99	£6,154

Following the Easter floods the Agency appointed consultants Posford Duvivier to undertake a study and produce a pre-feasibility report to establish whether a more detailed appraisal was warranted. The draft feasibility report was submitted to the Agency and this was revised to take into account comments

RISELEY BROOK FPS**Project Number 12210**

Approved Cost	£224,000
Expenditure 1998/9	£ 5,563
Total Expenditure to 31.3.99	£ 18,177

Following the Easter floods the Agency appointed consultants Posford Duvivier to undertake a study and produce a pre-feasibility report to establish whether a more detailed appraisal was warranted. The draft feasibility report was submitted to the Agency and this was revised to take into account comments.

Initial results are that a scheme for Riseley would not qualify for grant aid but that a combination of individual property defences and floodwalls protecting groups of properties is technically feasible

KIMBOLTON FLOOD FPS**Project Number 12212**

Approved Cost	£145,000
Expenditure 1998/9	£ 5,589
Total Expenditure to 31.3.99	£128,263

Following the Easter floods the Agency appointed consultants Posford Duvivier to undertake a study and produce a pre-feasibility report to establish whether a more detailed appraisal was warranted. The draft feasibility report was submitted to the Agency and this was revised to take into account comments

Initial results are that a scheme would not qualify for grant aid but that individual property defences are technically feasible.

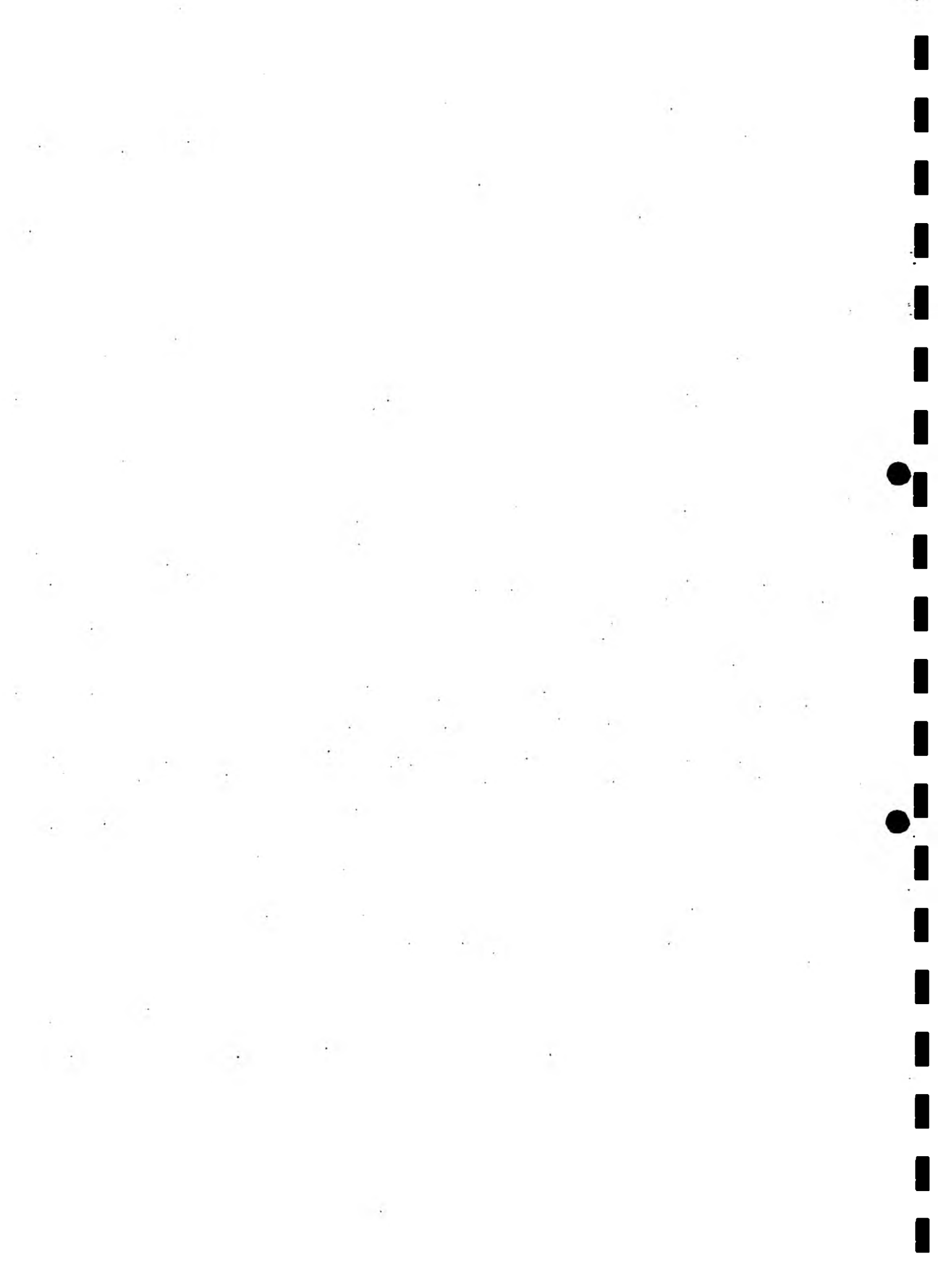
FISHERFLEET**Project Number 12045**

Approved Cost	£1,443,000
Expenditure 1998/9	-£ 252,333
Total Expenditure to 31.3.99	£2,794,822

The dispute between the Agency and its contractor Nuttalls was resolved during a three-day conciliation process whereby the Agency finally agreed to pay part of the claim.

A report was prepared and submitted to MAFF to request an increase in the current grant eligible sum. This was approved by MAFF and the sum revised from £1.144m to £2.247m.

The Agency through its external solicitors served notice on the original consultants to concur under the arbitration clause within the contract. The Agency is continuing its aim of trying to recover all abortive costs incurred including the contractors claim due to Breach of Contract



FISHERFLEET REMEDIAL WORKS

Project Number 12046

Approved Cost	£NIL
Expenditure 1998/9	£153,608
Total Expenditure to 31.3.99	£153,608

An Engineers report was prepared and documentation submitted to MAFF to obtain grant approval on this scheme. This was subsequently approved by MAFF.

Design and contract documents were prepared and a 22 week contract let Jackson Civil Engineering with a commencement date of 15 March 99. The contract period is 22 weeks. The Agencies consultants Halcrows are supervising the work. MAFF approval to the works has been obtained



Fisherfleet Remedial Works

HOUGHTON WEIRS IMPROVEMENT SCHEME

Project Number 12206

Approved Cost	£42,100
Expenditure 1998/9	£ 3,179
Total Expenditure to 31.3.99	£33,936

An Engineering report was prepared and submitted with other documentation to MAFF for grant aid. The Agency are still awaiting approval to the scheme from MAFF

TIDAL RIVER MATTRESSING PART T2
Project Number 12162

Approved Cost	£NIL
Expenditure 1998/9	£28,188
Total Expenditure to 31.3.99	£28,188

Tenders for the various materials necessary to construct the matteressing were sought and contracts let such that these were obtained ready for the construction process to commence early in the next finical year.

CUT OFF CHANNEL CONTROL STRUCTURES (Minor Capital)
Project Number 13085

Approved Cost	£NIL
Expenditure 1998/9	£27,530
Total Expenditure to 31.3.99	£41,696

Contract documents were prepared tenders sought and a contract let to undertake minor refurbishment works to the concrete structures. The works were completed successfully

SAFETY WORKS 6 (Minor Capital)
Project Number 13089

Approved Cost	£NIL
Expenditure 1998/9	£3,182
Total Expenditure to 31.3.99	£3,182

Contract Documents were prepared, tenders sought and a contract let to undertake safety works to various structures

SAFETY WORKS 7 (Minor Capital)
Project Number 13094

Approved Cost	£NIL
Expenditure 1998/9	£18,428
Total Expenditure to 31.3.99	£18,428

Contract documents were prepared, tenders sought and a contract let to undertake further safety works at various structures

MAINTENANCE AND OPERATIONAL WORKS

Throughout the year, an average of 72 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 total maintenance expenditure for the 1998/1999 financial year was:

<i>Activity Description</i>	<i>Expenditure £K</i>
<i>Dredging on inland/tidal rivers.</i>	314
<i>Works to banks and embankments, including grass cutting, repairs and vermin control.</i>	652
<i>Works on/to Structures, including periodic maintenance to all Structures, major servicing and scheduled repairs.</i>	374
<i>Weed control</i>	454
<i>Obstruction and pioneer clearance. Including the removal of fallen trees and the clearance of accumulated debris.</i>	253
<i>The maintenance and operation of pumping stations.</i>	60
<i>Sea defence / tidal waters</i>	413
<i>Other Works, including surveys.</i>	356
<i>Emergency Works</i>	48
<i>Contributions to Internal Drainage Boards relating to Highland Water.</i>	649
<i>Works generated as a result of the Easter '98 Flooding.</i>	317
TOTAL	3,890

CONSERVATION

RIVER CORRIDOR SURVEYS 1998/99

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 (RCS) programmes ensure that the Agency possesses 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. The information derived from river corridor surveys provides baseline data that can be an input into the Agency's maintenance and capital projects, for example the environmental appraisal being undertaken for the Newport Pagnell Flood Alleviation Scheme. The strategic management of the River Corridor Survey programme by Conservation staff means that surveys can be undertaken in a timely and cost effective manner.

The River Corridor Survey programme for 1998/99 has included both surveys and the management of data generated from previous years. An effective method of managing data is by use of a Geographical Information System (GIS), for eg. storing, analysis and presenting data, such as RCS. Conservation staff in Central Area are progressing the development of GIS to include data generated from previous surveys, such as water vole and otter sites. The use of GIS to present and analyse RCS data will allow the Conservation Team to provide a more effective service to Flood Defence colleagues for both maintenance and capital projects.

Conservation surveys undertaken during 1998/99:

Phase 1 Habitat Surveys

A total of 347 km of main river in the Cam and Ely Ouse catchments were surveyed using the Joint Nature Conservation Committee (JNCC) Phase 1 Habitat Survey method.

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.

National Vegetation Classification (NVC) Phase 2 Surveys

The Phase 1 Habitat Surveys undertaken during 1997/98 identified a number of sites on 'main river' that merited a more intensive survey because of their habitat and floral interest. The NVC Phase 2 approach was used to study in detail 22 sites on the Rivers Great Ouse, Heacham, Ingol, Babingley, Lark and Nar.

Riparian Tree Management Surveys

The period 1998/99 saw the culmination of the Riparian Tree Management Survey in Central Area. The survey provides important information of the health status of riverside trees. Trees are classified into three categories based on whether they need management in 1-5, 6-10, 11-15 years. The information generated is valuable in identifying trees presenting a potential flood hazard and to highlight their ecological and landscape value.

Water Vole Surveys

Water Voles are a Biodiversity Action Plan (BAP) species because of their declining population. In addition, the water vole is a priority BAP species for the Agency, which places a particular responsibility on the Agency to ensure its survival and re-establishment.

Water Vole surveys were undertaken in Cambridgeshire and Bedfordshire by the Cambridgeshire Wildlife Trust and in Essex by the Essex Wildlife Trust. Information provided by these surveys can be used for river management purposes, highlighting where maintenance and enhancement is of prime importance to help halt the decline of their once common status. This was a collaborative project undertaken with support from English Nature, the Trusts and South Cambridgeshire District Council. Unfortunately the survey identified very few populations of water voles in the area.

Crayfish Surveys

Native Crayfish are a Biodiversity Action Plan Species due to their declining population and threat from introduced alien crayfish species. In order to provide information on the distribution and status of the native crayfish in Central Area a number of collaborative surveys on the Rivers Rhee, Ivel and Ouzel were undertaken during 1998/99. These projects were in association with the Cambridgeshire and Bedfordshire Wildlife Trusts, South Cambridgeshire District Council, English Nature, the Greensand Trust and the Bedfordshire and River Ivel IDB.

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 last years Easter floods, the upstream weir was washed away. Construction of the replacement weir was completed during the summer of 1998 and is operating successfully.

MAINTENANCE DREDGING

In the northern half of the catchment, the Rivers Cam, Ely Ouse, Ten Mile, Rhee, Granta, Babingley, Wissey, along with Wicken Water, Wendens Ambo Stream, the Tidal Gt Ouse and Ten Mile River were dredged during 1998 to a total of 25.48 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.

In the southern half of the catchment the Rivers Kym, Purwell and Great Ouse at Thornborough and Buckingham, along with Church Drain were dredged during 1998 to a total of 21.45 km.

A back channel of the Great Ouse at Wolverton Mill was also scheduled for dredging in 1998, however consultation raised some issues with the Milton Keynes Parks Trust who manage the land alongside the mill stream for nature conservation. They had cause for concern over the proposed dredging for the following reasons:

- It would disrupt habitat and refugia for a great variety of invertebrates (especially dragonfly larvae – some of which are scarce), and fish, birds etc. Populations of dragonflies with long aquatic larval stages can take a long time to recover from larval habitat loss.*
- The millstream is ideal habitat for the spined loach, a species protected by the EC Habitats Directive and Bern Convention, and which is known to be present in the upper reaches of the Ouse, although its presence has not been established.*
- It makes the stream visually and aesthetically less pleasing.*
- It causes disruption and damage to the parkland and damage to bankside habitats, particularly from the disposal of arisings.*

The Milton Keynes Parks Trust felt that unnecessary dredging would be contrary to the spirit of the Agency's duty to have due regard for and to further the interests of nature conservation.

Therefore the Agency concluded that it would be environmental best practise for the full dredging operation to be postponed. It was proposed that the Agency and the Milton Keynes Parks Trust should work together to develop a joint management strategy for the mill stream which would satisfy concerns for flood protection in the area and also protect the conservation status of the waterway.

The following strategy was negotiated between the respective parties:

- The obstructing reedbed at the upstream end of the millstream would have to be cleared to allow greater flows through the millstream. The Milton Keynes Parks Trust would employ contractors with the appropriate machinery to clear the reedbed.*
- The Parks Trust would undertake annual vegetation control in the channel, in order to maintain a consistent flow.*

- *The Environment Agency would continue negotiations with the prospective developers of the Wolverton Mill site, for the renovation of the wooden sluice gates under the Mill building. The operation of the restored sluice gates during appropriate flow conditions should promote natural 'scour' of the channel.*
- *The Parks Trust would undertake monitoring of the millstream to determine how the bed profile changes over time.*

A full review of this management strategy would be undertaken upon completion of the monitoring. An analysis of flood protection together with the conservation status of the channel would be done to determine the next steps in the management of the Wolverton Mill Stream.

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 third 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.

HYDROLOGICAL REPORT 1 APRIL 1998 TO 31 MARCH 1999

1. Precipitation

Rainfall for the period (Table 1.1) was 758 mm (125% LTA), resulting in a rainfall surplus throughout the year. Four of the twelve months had below average rainfall, with April 1998 rainfall exceeding the historical (1961–1990) maximum for April. April 1998 saw the highest rainfall with 131 mm (305% LTA).

Table 1.1 Catchment rainfall compared to average rainfall

MONTH	YEAR	RAINFALL (mm)	LONG TERM AVERAGE RAINFALL (mm)
APRIL	1998	131	43
MAY	1998	12	50
JUNE	1998	105	55
JULY	1998	32	49
AUGUST	1998	33	53
SEPTEMBER	1998	88	53
OCTOBER	1998	86	53
NOVEMBER	1998	57	58
DECEMBER	1998	67	54
JANUARY	1999	67	53
FEBRUARY	1999	28	38
MARCH	1999	52	46
	TOTAL	758	605

The soil moisture deficit (SMD) was negligible at the beginning of April and significantly lower than the LTA. The SMD rose to above average during July, August and September and remained close to average throughout the remaining months.

2. River Flows

River flows were above or close to average for most of the twelve month period, reflecting the rainfall and SMD conditions. Flows in the Bedford Ouse peaked in April 1998 in response to the high rainfall and far exceeded the historical maximum. Flows in the Little Ouse reached the historical maximum in April 1998 but peaked during March 1999. Flows in the Ivel and the Ely Ouse and Cut Off Channel, whilst well above average during April 1998, were less affected during the Easter floods and higher flows were observed in January 1999.

3. Groundwater Levels

Groundwater levels recovered well from the previous twelve month period when the levels were below the long term average. Recharge of the Chalk aquifers was good from October to March and levels were well above average at the end of the recharge period. Similarly recharge was good in the Greensand aquifer around Bedfordshire and levels rose to well above average. The levels began to fall quickly in February to around average.

4. Flooding

a) Fluvial

Major flooding occurred in April 1998 as a result of intense and prolonged rainfall. The Easter flood report should be referred to for further information.

Several periods of fluvial flooding occurred from late October to early November, throughout January and during early March. During these events a number of yellow and amber flood warnings were issued and navigation closures were put in place between Bedford and Earith on the Bedford Ouse.

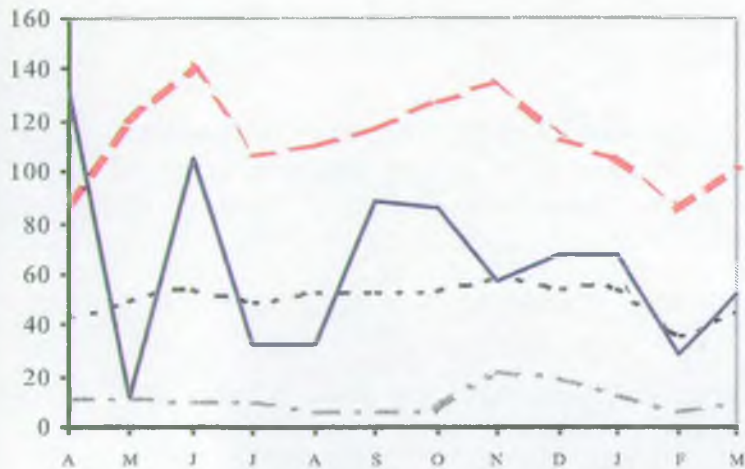
b) Tidal

There were four tidal events during this period which resulted in one amber and three yellow alerts being issued on the 8th October, 5th and 6th November, and 5th December.

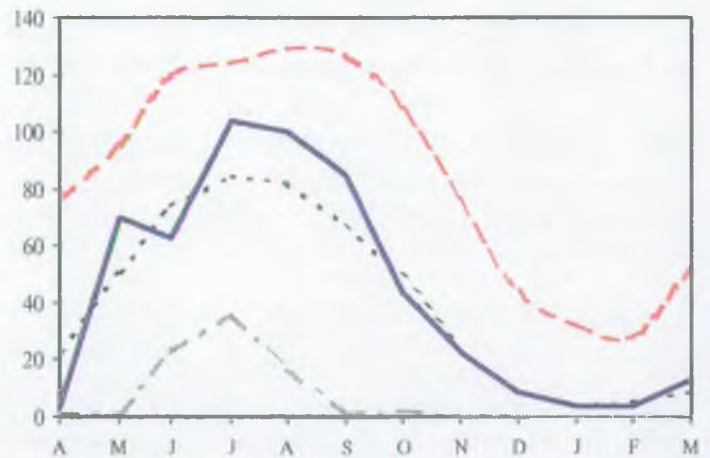
**CENTRAL AREA KEY HYDROMETRIC DATA
APRIL 98 - MARCH 99**

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

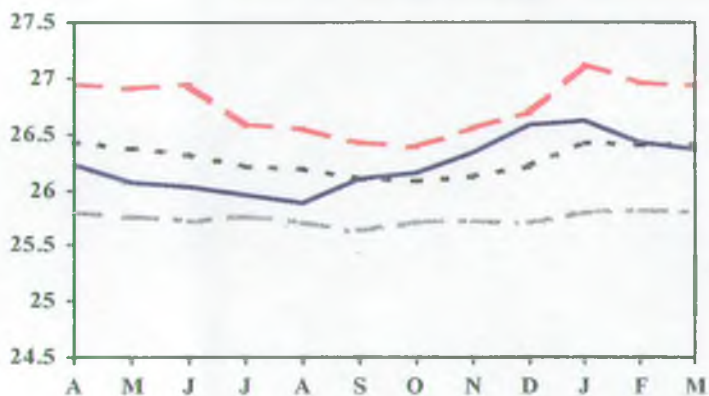
Monthly Areal Average Rainfall



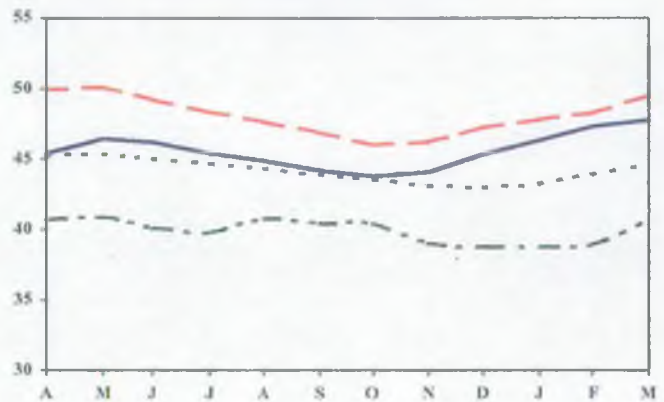
Areal Soil Moisture Deficit- real Land use



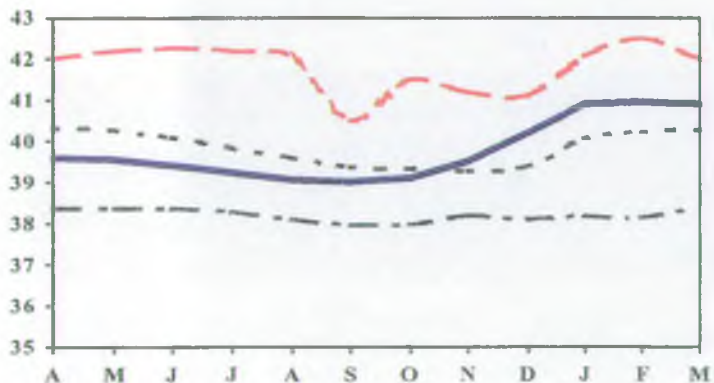
Lower Greensand levels at TL14/001 Furzenhall Farm
TL 193 468. Levels in mAOD (GL 28.07)



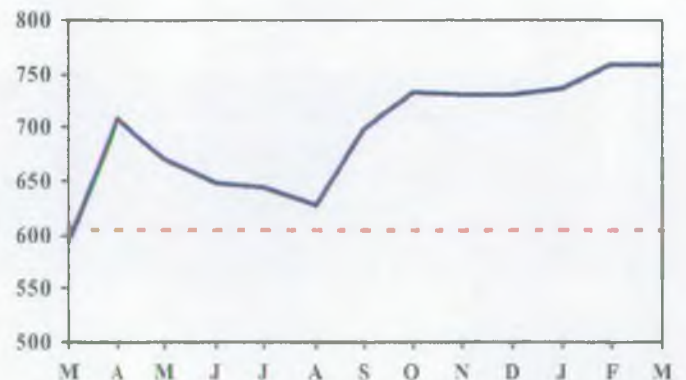
Chalk Groundwater levels at TF81/10 Washpit Farm
TF 813 195, Levels in mAOD (GL 80.36)



Chalk Groundwater levels at TL54/019 Chesterford Park
TL 435 423 Levels in mAOD (GL 107.85)



Monthly Rainfall Surplus/Deficit
Dotted line is annual average. Solid line is total for last 12 months

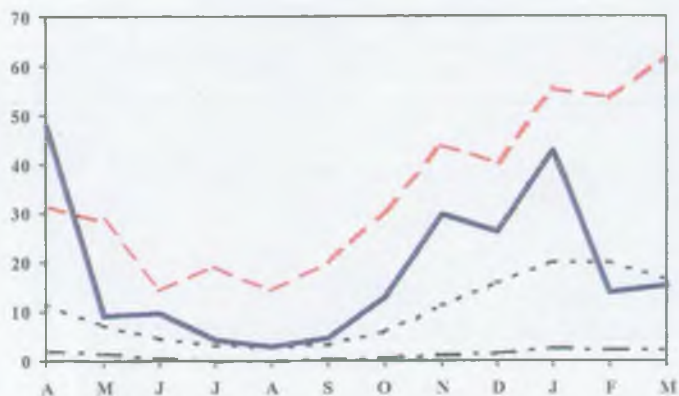


KEY	
—	CURRENT VALUES
.....	LONG TERM AVG.
- - -	HISTORICAL MAX
- . - .	HISTORICAL MIN

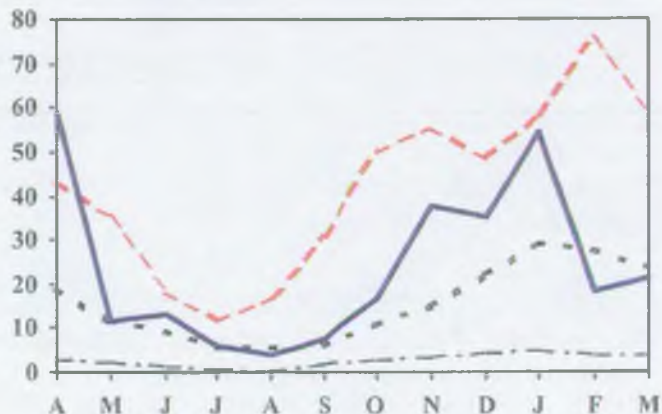
Central Area Key Hydrometric Data
APRIL 98 - MARCH 99

Monthly mean river flows.
All flows in cumecs

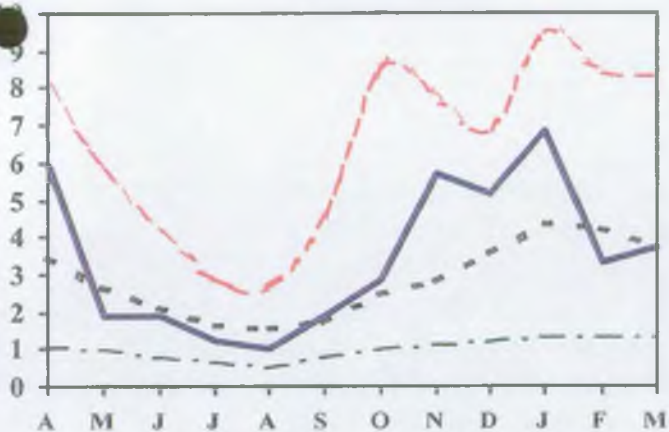
Bedford Ouse Flow at Bedford



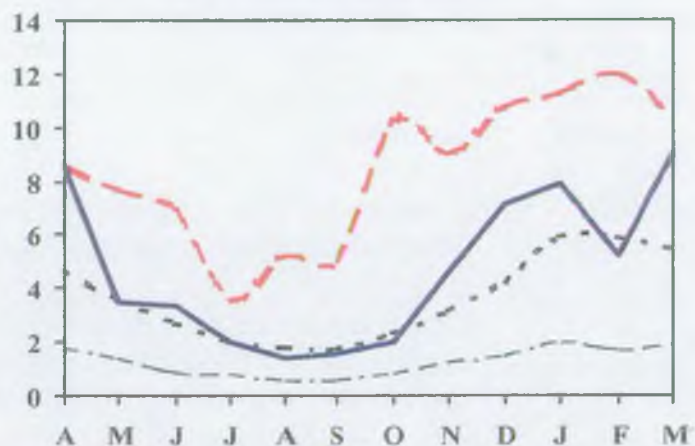
Bedford Ouse Flow at Offord (Gross)



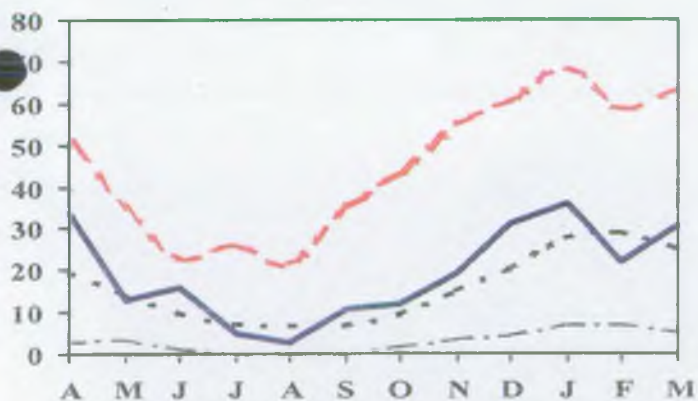
Ivel Flow at Blunham



Little Ouse at Abbey Heath



Ely Ouse and Cut Off Channel Flows at Denver



GREAT OUSE LOCAL FLOOD DEFENCE COMMITTEE

FINAL ACCOUNTS 1998/1999

FINANCE REPORT

The report, attached as Appendix A, is presented, showing the audited out-turn figures for the year ending 31st March 1999.

Actual figures for 1997/98 are shown for comparison purposes, together with the approved budget for 1998/99, a revised budget for 1998/99, actual figures for 1998/99 and variances i.e. the revised budget versus actual.

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

REPORT

<u>Line No.</u>	<u>Variance</u>
-----------------	-----------------

- | | |
|-----|--|
| 8/9 | <i>Overall maintenance expenditure, at £2,885, was within 2% of the revised budget, although there was some variation between fluvial and tidal elements.</i> |
| 10 | <i>Other operational costs exceeded the revised budget by £48k. The revised budget was based on a forecast underspend attributable to delays in the completion of the LIDAR contract for Section 105 Surveys. This work was not completed; however, additional expenditure was incurred at the end of the year relating to insurance claims and gratuity scheme payments for Flood Defence manual workers.</i> |

Main items of expenditure during the year were:

- Contributions to Internal Drainage Boards relating to Highland Water of £648k;*
- Flood Warning £55k;*
- Section 105 Surveys £61k; and*
- River Corridor Surveys £40k.*

- | | |
|----------|--|
| 11/12/13 | <i>Operational Support Costs, at £2,686, varied from the budget by 3.7%. The overspend is mainly attributable to increased salary related costs over the Easter Flooding period. An element of the overspend relates to slightly higher than anticipated NIS costs relating to Y2K requirements.</i> |
| 21/22 | <i>There is a significant variance on Grant Aided Works. The majority of this variance relates to the expenditure on the Fisher Fleet Erosion Scheme contractor settlement. This had been included in the finance paper presented at the last Committee Meeting.</i> |

The expenditure and grant income had been accrued for, however, the grant was claimed against the current year's GEC of £2.7m.

- 26 *The level of MAFF Grant Income is consistent with the level of Grant Aided Works undertaken. However, MAFF Grant Income was reduced following a grant write-off relating to the current and previous years.*
- 28/14 *The net effect of the above is a net cost of capital expenditure of £1,927, some £219k less than the budget.*
- 20 *Income for 1998/99 totalled £8,852k and expenditure £8,577k, resulting in an increase in the Committees balances of £275k, and a final balance of £1,218k carried forward into 1999/2000. The final balance is £37k below the revised budget.*

APPENDIX A

GREAT OUSE LOCAL FLOOD DEFENCE COMMITTEE**FINAL ACCOUNTS 1998/1999**

(£000's)

LINE NO.		ACTUAL 1997/98	APPROVED BUDGET 1998/99	REVISED BUDGET 1998/99	ACTUAL 1998/99	VARIANCE
1	County Council Levies	5860	6039	6039	6039	-
2	Int. Drainage Board Precepts	1707	1501	1501	1501	-
3	General Drainage Charges	611	621	614	614	-
4	Other	245	300	300	289	-11
5	Interest - on Cash flow	294	255	343	327	-16
6	- Section 47 balances	69	65	87	82	-5
7	TOTAL INCOME	8786	8781	8884	8852	-32
8	Maintenance - Fluvial Main River	1974	2176	2448	2472	-24
9	- Tidal/Sea Defences	566	364	380	413	-33
10	Other Operational Costs	944	965	950	998	-48
11	Operational Support: - Regional	1905	1896	1901	1967	-66
12	- National	243	318	318	322	-4
13	- NIS	300	369	369	397	-28
14	Revenue Contribution to Capital	3225	2852	2146	1927	219
15	Working Capital	52	60	60	81	-21
16	TOTAL EXPENDITURE	9209	9000	8572	8577	-5
17	SURPLUS/DEFICIT	-423	-219	312	275	-37

	RESERVE					
18	Section 47 Balances b/fwd	1366	873	943	943	-
19	Surplus/Deficit	-423	-219	312	275	-
20	Section 47 Balances c/fwd	943	654	1255	1218	-

21	Grant Aided Works - Fluvial Main River	1531	910	721	608	113
22	- Tidal River	2856	2690	1979	937	1042
23	Non Grant Aided Works	128	100	125	138	-
24	Design/Supervision	635	650	730	732	-
25	TOTAL EXPENDITURE	5150	4350	3555	2415	-
26	MAFF Grant	1925	1498	1409	488	921
27	Contributions	0				
28	REVENUE CONTRIBUTION TO CAPITAL	3225	2852	2146	1927	219
29	Grant Earning Ceiling	4050	3000	2700	2700	-

FINANCE REPORT
CAPITAL EXPENDITURE ANALYSIS 1998/1999

SCHEME REFERENCE	SCHEME DESCRIPTION	EXPENDITURE (£'000)
LMA19012	ARTS PH2 }	70
LMA19023	ARTS PH3 }	
LMA19034	ARTS PH4 }	
LMB11006	ELY OUSE FD MONITORING	4
LMB11042	WELCHES DAM PUMPING STATION	146
LMB11344	COUNTERDRAIN NR SALTERS LODGE	50
LMA11047	WELMORE LAKE SLUICE	1,350
VARIOUS	KING'S LYNN TO DENVER FLOOD PROTECTION	29
LMB12045	FISHERFLEET EROSION	-377
LMB12046	FISHERFLEET REMEDIAL	101
LMB12160	TIDAL RIVER MATTRESSING	34
LMB12071	HUNSTANTON/HEACHAM BEACH RECYCLING	35
LMB12072	HUNSTANTON/HEACHAM BEACH SURVEYS	18
LMB12073	HUNSTANTON/HEACHAM ENVIRONMENTAL MONITORING	24
LMB12074	SNETTISHAM HARD DEFENCES	15
LMB12075	HEACHAM HARD DEFENCES	13
LMB12077	HEACHAM/SNETTISHAM BEACH NOURISHMENT	17
LMB18895	SHORELINE MANAGEMENT 98/99	16
TOTAL GRANT ELIGIBLE		1,545
LMA13077	A G WRIGHT SLUICE	4
LMA19023	ARTS PH3 }	7
LMA19034	ARTS PH4 }	
LNC11034	SLUICE AUTOMATIONS - THET NO1 & BRANDON STAUNCH	6
LNC11060	ST IVES VERTICAL LIFT GATE	25
LNC13065	DUXFORD SLUICE WEIR	10
LNC13085	CUT OFF CHANNEL CONTROL STRUCTURES	25
VARIOUS	SAFETY WORKS	47
LMB12045	FISHERFLEET EROSION	2
LND13077	TIDAL OUTFALL - AUTOMATION (RIVER INGOL)	2
LMB12071	HUNSTANTON HEACHAM BEACH RECYCLING	2
LMB12074	SNETTISHAM HARD DEFENCES	6
LMB12077	HEACHAM/SNETTISHAM BEACH NOURISHMENT	2
TOTAL NON GRANT ELIGIBLE		138
DESIGN &	- IN HOUSE	198
SUPERVISION	- CONSULTANTS	534
TOTAL CAPITAL EXPENDITURE		2,415