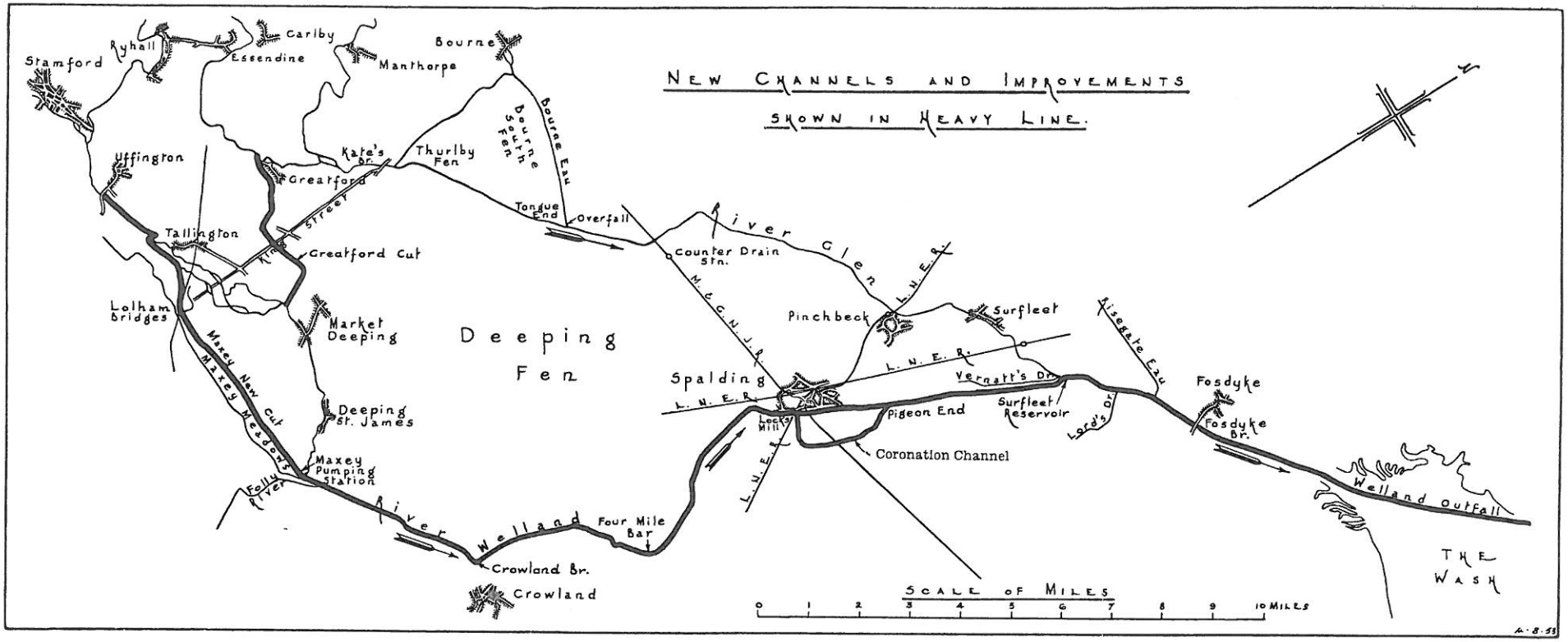
WELLAND RIVER BOARD

A short description of the
works carried out on

THE RIVER WELLAND MAJOR IMPROVEMENT SCHEME

1947 - 1957


NEW CHANNELS AND IMPROVEMENTS
SHOWN IN HEAVY LINE.
Stamford
Ryhall
Essendine
Carlby
Manthorpe
Bourne
Bourne South Fen
Bourne Eau
Uffington
Kate's Br.
Thurlby Fen
Greatford
Tongue End
Overfall
Tallington
King Street
Greatford Cut
Counter Drain Stn.
River Glen
L.N.E.R.
Lolham Bridges
Market Deeping
Deeping Fen
M.&G.N.J.R.
Pinchbeck
Surfleet
Aisegate Eau
Spalding
L.N.E.R.
Vernatt's Dr.
Fosdyke
Maxey New Cut
Maxey Meadows
Deeping St. James
Locks Mill
Pigeon End
Surfleet Reservoir
Lord's Dr.
Fosdyke Br.
Coronation Channel
Maxey Pumping Station
Folly River
River Welland
Four Mile Bar
Welland Outfall
Crowland Br.
Crowland
THE WASH
SCALE OF MILES
0 1 2 3 4 5 6 7 8 9 10 MILES
A.8.53

The Welland Major Improvement Scheme was first approved and initiated by the River Welland Catchment Board in 1944, the members being :—

Chairman :

EDWARD E. E. WELBY-EVERARD, M.A., D.L., J.P.

Vice-Chairman :

THOMAS O. MAWBY

Members :

ALD. THOMAS W. ATKINSON, J.P.
JAMES BURGESS
ALD. HARRY DEER, J.P.
FRANK W. DENNIS
HUBERT W. A. ELLIOT
THE MOST HONOURABLE THE MARQUIS OF EXETER, K.G., C.M.G., T.D.
ALD. JOHN T. FORSELL
GEORGE A. MITCHELL, J.P.
THOMAS C. MOLESWORTH
ALD. CAPT. ASHLEY D. POTTER, O.B.E., J.P.
ALD. RICHARD T. PROCTOR, J.P.
ARTHUR J. TOMPKINS
ALEX WEST, J.P.

Officers of the Board :

LEOPOLD C. HARVEY, *Clerk.*
EDWIN G. TAVERNER, M.S.E., *Engineer.*

In addition two large syphons were constructed under the new chanel by direct labour to cater for the existing local drainage channels.

The four bridges required to carry the existing roads over this cut are as follows :

Market Deeping Bridge	Constructed in 1956 by W. & C. French Ltd.
King Street Bridge ...	Constructed in 1955 by W. & C. French Ltd.
Barholm Road Bridge	Constructed in 1955 by W. & C. French Ltd.
Greatford Road Bridge	Constructed in 1956 by J. L. Kier & Co. Ltd.
Greatford Sluices ...	Constructed in the Board's Workshops.

It is anticipated that the Glen Cut will be completed and in operation for the winter of 1957/58 thus completing all work under the scheme.

The River Welland Major Improvement Scheme has been designed and supervised throughout by Mr. E. G. Taverner, the Board's Chief Engineer, assisted by Mr. R. L. G. Baxter, Deputy Engineer, and Mr. W. A. Fower, District Engineer. The Consulting Engineers for the majority of the bridges were Messrs. Stirling, Maynard & Partners, Peterborough.

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GLEN CUT. NEW CHANNEL BELOW GREATFORD ROAD BRIDGE.

GLEN CUT. INTAKE SLUICES AND ROAD BRIDGE AT GREATFORD.

WELLAND RIVER BOARD

1957

Chairman :

LT. COL. THE HON. P. E. BRASSEY, J.P.

Vice-Chairman :

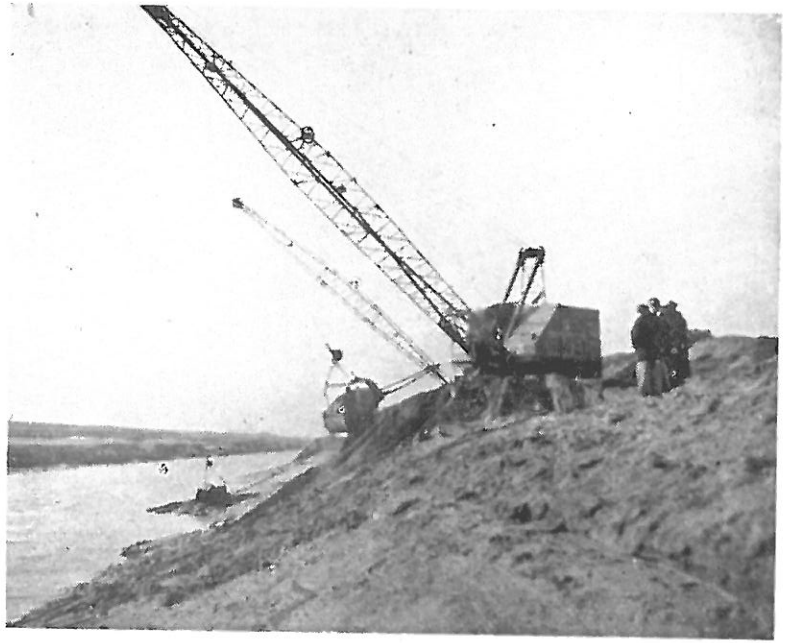
CAPT. A. H. CLARK

Members :

ALD. J. A. BARTRAM
COUN. T. W. BROWN, J.P.
F. B. CHAPMAN, O.B.E.
COL. R. COOKE, C.B.E., ~~O.B.E.~~, M.C.
H. W. A. ELLIOTT
B. G. ELLIOTT
COUN. E. FISHER
W. A. GEORGE
COUN. A. W. P. LIDDLE
E. W. MELKSHAM
MRS. D. MOSELEY
T. R. PICK
ALD. CAPT. A. D. POTTER, O.B.E., J.P.
M. R. RIDDINGTON
H. C. C. TINSLEY
ALD. COL. F. D. TROLLOPE-BELLEW, D.S.O., O.B.E., M.C., D.L.
L. G. TURNILL

Officers of the Board :

RAYMOND W. HASTINGS, *Clerk.*
EDWIN G. TAVERNER, M.S.E., *Engineer.*



FOSDYKE BRIDGE TO SURFLEET. COMMENCEMENT OF DREDGING.

FOSDYKE BRIDGE TO SURFLEET. IMMEDIATELY AFTER DREDGING.

This section of the work was carried out during 1955 by direct labour and hired plant and consisted of the removal of 63,000 cu. yds. of material and over 300 large willow trees.

In addition Tallington Road Bridge was reconstructed by J. L. Kier & Co. Ltd., King's Lynn.

These two banks and channel form the gathering ground for all the flood waters of the River Welland below Stamford, and from Uffington they are now controlled through the new channels and thence via the Spalding Coronation Channel and out to sea through Fosdyke Bridge.

8. THE GLEN CUT.

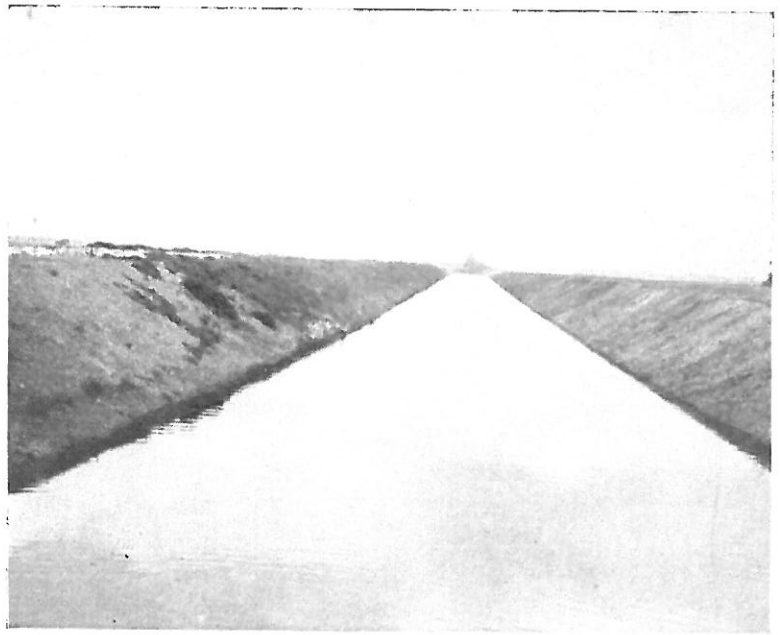
With the removal of the flood waters of the Welland from the Deeping area, the old channel of the Welland through the Deepings has adequate capacity to take the much smaller flood flows from the Glen.

After extensive surveys it was found that a channel could be cut across country by following the boundaries of the fields as far as possible from Molceys Mill, Market Deeping to the West Glen at Greatford. This cut consists of a shallow embanked channel varying from 24 to 17 feet wide with four road bridges and control sluices at Greatford.

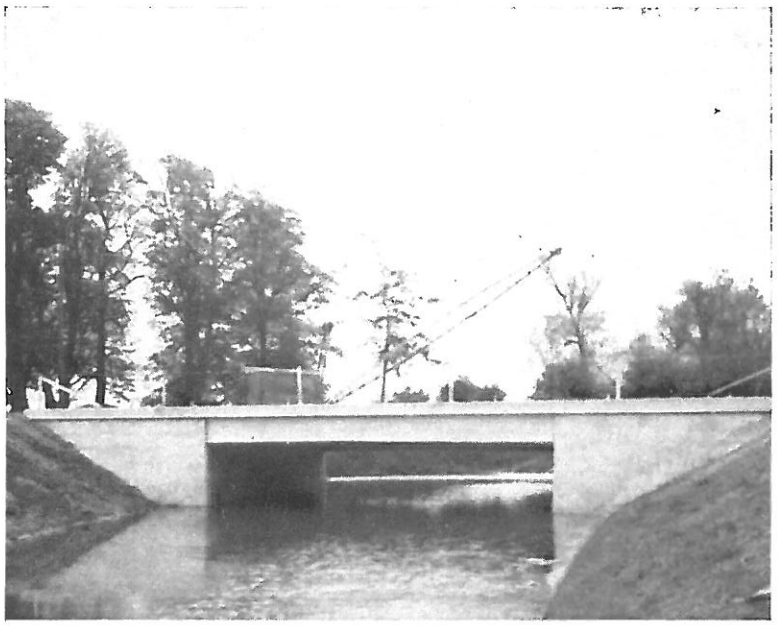
The channel will be operated in flood periods to discharge the flood waters of the Glen which in the past have caused considerable flooding at Greatford, Wilsthorpe and Stowe Corner and over a great deal of arable land near King Street and the Baston area.

In addition it will relieve the overloading and overtopping of the Glen Banks from Kates Bridge through the Bourne Fen, Pinchbeck and Surfleet areas which has been such a danger in the past.

In 1955, the excavation for the channel was carried out and consisted of the removal of 102,206 cu. yds. of material and forming it into banks. The bulk excavation was carried out by G. Wimpey & Co. and the bank formation and trimming was carried out by direct labour and hired plant.



GLEN CUT. NEW CHANNEL ABOVE MARKET DEEPING ROAD BRIDGE.



GLEN CUT. OUTFALL AT MARKET DEEPING ROAD BRIDGE.

THE RIVER WELLAND MAJOR IMPROVEMENT SCHEME

THE scheme was first approved and initiated by the River Welland Catchment Board in 1944.

Work was commenced in 1947, soon after the disastrous floods of that year. The scheme has been designed to allow for conditions as bad, or even worse when adverse tidal conditions are also encountered, as conditions were at the peak of the 1947 flood which was the worst experienced within living memory.

The whole scheme was devised in close consultation with the Engineers and administrative officials of the Ministry of Agriculture, Fisheries and Food.

The scheme can be summarised into the following works.

1. Widening, regrading and raising the flood banks of the tidal channel of the Welland from Fosdyke Bridge to Marsh Road. 1947-49.

2. Piling and dredging the existing channel from Cowbit Road Sluices to Locks Mill. 1948-49.

3. Construction of the Spalding Coronation Channel from Marsh Road to Cowbit Road Sluices. 1948-53.

4. Installation of a New Sluice in the River Welland at Pigeon End just upstream of the entry of the Flood Alleviation Chanel. A lock also has to be incorporated in this structure at the request of the Ministry of Transport. 1954.

5. Widening the channel from Locks Mill to Folly River through Cowbit and Crowland Washes, and constructing a new cradge bank and weirs at Four Mile Bar and Crowland Bridge to enable the washes to be used as a reservoir if required. 1951-1953.

FOSDYKE BRIDGE TO SURFLEET. FASCINE WORK IN PROGRESS.

FOSDYKE BRIDGE TO SURFLEET. RIVER BATTER STABILISED.

Lolham—Tallington.

From Lolham Bridges to Tallington an entirely new channel had to be surveyed and designed. This was sited to run north alongside the British Railways main line and then across country to Tallington. This channel has a bed width of 45 feet and 92,000 cu. yds. of material was excavated by G. Wimpey & Co. and the banks were formed and completed by direct labour and hired plant.

At the upstream end of the channel, the new cut joins the two channels of the Welland, one leading to Tallington and West Deeping Mills and the other leading to Lolham and Maxey Mills. To ensure that the flow of water during all normal times to the Mills and through the Deepings was the same as in the past, three weirs were designed and constructed by the Board's staff at a site just below Tallington Bridge. When abnormal or flood flows prevail, the water now is automatically discharged down the Lolham and Maxey new flood channel.

This work was completed by the winter of 1955 and the flood channels were in operation early in 1956.

7. TALLINGTON — UFFINGTON.

From Tallington Bridge to Uffington the course of the old river was followed wherever possible. A new cut was made immediately upstream of Tallington where the old river followed a very tortuous course. In the past on this section floods have spread out on both sides of the river, across Bainton meadows and into the village of Tallington.

The scheme here consisted of widening the old river channel and obtaining enough spoil to form the banks at such a level that the peak floods would not overtop them.

On the north side, from Tallington the bank has been made continuous until it reaches the old canal bank at the required height at Cophill Farm. On the south side a continuous flood bank has been constructed from Tallington to about half a mile upstream of Uffington Bridge to join the old railway bank.

MAXEY CUT. CHANNEL COMPLETED BELOW LOLHAM BRIDGES.
(*Times Photograph*)

LOLHAM TO TALLINGTON. NEW CUT ABOVE LOLHAM BRIDGES. WORK IN PROGRESS.
(*Times Photograph*)

6. The construction of a flood relief channel from the junction of the Folly River near Deeping St. James via the Maxey North Drain to Lolham Bridges and a new cut from Lolham Bridges to the junction with the old course of the River Welland near Tallington Church. 1954-55.

7. The widening, straightening and embanking of the old river from Tallington to about half a mile upstream of Uffington Bridge. 1954-56.

8. Construction of the Greatford Cut from Market Deeping to Greatford to take the surplus flow from the River Glen at Greatford in Flood periods and relieve the danger of breaches in the Glen Banks from Kates Bridge to Surfleet. 1955-57.

A scheme of this magnitude naturally had to be carried out in stages. Wherever possible works were carried out by the Board's staff and workmen but the larger works were let by tender to various contractors.

The particulars of the various works are as follows:

1a. FOSDYKE BRIDGE TO SURFLEET.

Tidal excavation and flood bank formation, enlarging existing Welland Channel to bed width of 130 feet with graded bed level -7.5 O.D.N. at Fosdyke to -2.0 O.D.N. at Surfleet. 450,000 cu. yds. excavation carried out by Geo. Wimpey & Company Ltd. Work commenced December 1947 and was completed within the contract time of 10 months.

1b. SURFLEET TO FULNEY.

Similar to No. 1a with bed width 110 feet bed level -2.0 O.D.N. 1,250,000 cu. yds. excavation carried out by the Butterley Company Ltd. Work commenced April 1948 and was completed within the contract time of 18 months.

2. COWBIT ROAD BRIDGE TO LOCK'S MILL.

This consisted of sheet piling both banks of the existing channel for a distance of 820 lin. yds., with anchor blocks and tie rods to stabilise the banks to allow dredg-

FOSDYKE BRIDGE TO SURFLEET. WIDENING IN PROGRESS.

FOSDYKE BRIDGE TO SURFLEET. WIDENING AND FASCINE WORK COMPLETED.

channel with a bed width of 100 feet, reinforcing Deeping High Bank and constructing a new wash cradge bank and soke dyke, for a distance of 4 miles. This bulk excavation was also carried out by G. Wimpey & Co. and direct labour and hired plant completed the bank formation and soke dykes.

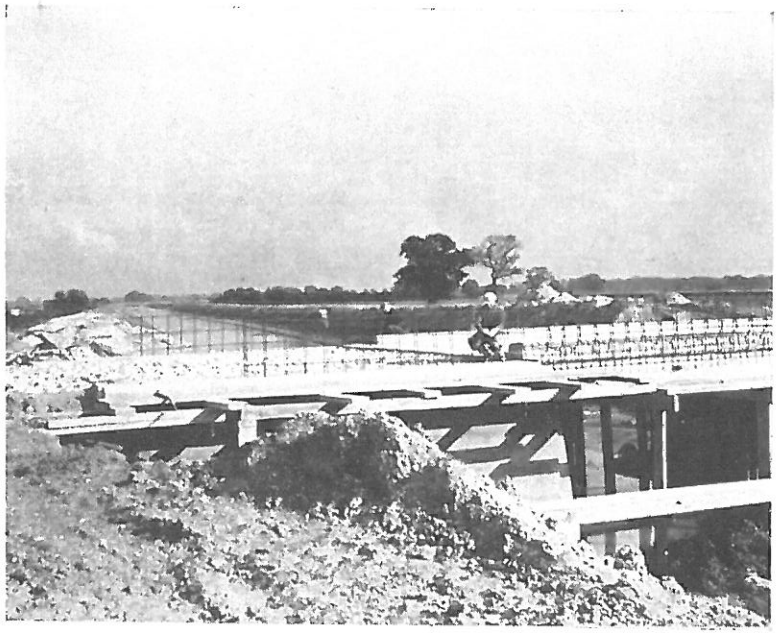
6. THE MAXEY CUT.

The Maxey Cut consisted of widening and regrading the old Maxey North Drain as far as Lolham Bridges, and the spoil was used to construct flood banks to prevent any further flooding of the Maxey Meadows and the Maxey Drainage area.

The bed width of the channel varies from 50 to 45 feet and the work consisted of the removal of 242,000 cu. yds. of spoil. The main excavation was carried out by G. Wimpey & Co. and the bank formation, shaping and trimming was carried out by the Board's plant and employees, in 1954.

On this section the following works were also carried out to give the required capacity for the new channel.

Tidal Sluice at Maxey South Drain Outlet	Direct Labour. River Board Employees.
Underpinning of Peakirk Railway Bridge	Derek Crouch Ltd., Peterborough.
Peakirk Road Bridge ...	Dowsett Engineering Co.
Nine Bridge Viaduct underpinning and protection works	Derek Crouch Ltd., Peterborough.
Etton Road Bridge	W. & C. French Ltd., Wisbech.
Woodgate Lane Bridge ...	Derek Crouch Ltd., Peterborough.
Nunton Lodge Bridge ...	Dowsett Engineering Co.
Protection works and underpinning Lolham Road and Railway Bridges	Direct Labour. River Board Employees.



MAXEY CUT. NEW CHANNEL AND BRIDGE CONSTRUCTION AT ETTON ROAD BRIDGE.
(*Times Photograph*)

MAXEY CUT. CHANNEL FORMATION BELOW NUNTON ROAD BRIDGE.
(*Times Photograph*)

ing the channel to the required dimensions to give the necessary flood capacity within the restricted width between two major roads. This work was carried out by W. & C. French Limited.

A supplement to this Contract consisted of piling and protection by concrete of the abutments of the main Spalding—March line railway bridge over the existing Welland Channel. The required bed level under this bridge was 0.0 O.D.N. which was about 5 feet below the existing abutments of the bridge. Consequently extensive works were required to avoid scour under the foundations.

On completion of the piling wall on this contract, the dredging of the chanel between the piles to the required bed level and to the full width of the piled channel was carried out by direct labour with hired plant. The above works completed the river section between the commencement of the By-Pass at Cowbit Road Sluices and Lock's Mill.

3. THE CORONATION CHANNEL.

The town of Spalding is built along the banks of the River Welland, a number of buildings, roads, etc., being in close proximity to the watercourse.

The reasons for by-passing the Town with the flood alleviation channel for the purpose of the Welland Major Improvement Scheme, as against improving the existing waterway through Spalding, were fully set out in the Report in connection with improvements to the Main Rivers within the Welland Area dated July 1944.

The line of the Spalding Flood Channel was determined after various surveys had been made. The problem was to combine the hydraulics of the scheme as far as possible with the various interests adjacent to the town of Spalding and to avoid the demolition of residential property. The Town Council were consulted, and their main requirements were that a public right of way should be provided round the banks of the channel and that the works should be an asset to the town both from an aesthetic and recreational point of view.