

NORTH LEVEL COMMISSIONERS

The Report

of

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on the Flood consequent upon the breach of
the Crowland Wash Bank on the 21st March,
1947, as submitted to the General Committee
at a Meeting held on the 12th May, 1947.

Drainage Office,
Thorney.

NORTH LEVEL COMMISSIONERS

Engineer's Report on Flood consequent upon the breach of the Crowland Wash Bank, 21st March, 1947 (submitted to General Committee at Meeting held 12th May, 1947).

1. After the severe snow and frost of January, February and the early part of March the thaw began slowly on Monday, 10th March, and developed more rapidly on and after Thursday, 13th March, there being rainfalls of 0·32ins. on the 10th and 0·72ins. on the 12th recorded at Tydd. Until the 13th March the water level in the drains had been kept as low as the accumulations of snow and very thick ice would allow, the pumping stations being starved from lack of water.
2. On the 13th March continuous pumping with all pumps was possible and put into operation at Tydd and Cross Guns Pumping Stations. The same procedure was put into operation at Dog-in-a-Doublet Station on 17th March, and French Drove Pumping Station was working 16 hours a day from 10th March.
3. Water levels at the pumping stations started rising considerably late on Sunday 16th March, and the water had to be controlled by regulation of sluices on that day and the succeeding Monday and Tuesday. All doors at Clows Cross were shut by late on Tuesday and nearly all the contributory districts along the Main Drain had also shut their slackers by this time. Bagging operations to prevent water entering Tydd Pumping Station were carried out on the Sunday night and Monday morning, and on Monday the water rose over the

concrete weedscreen platform at Tydd Station. It rose to a maximum height of $4\frac{1}{2}$ inches above this platform on Tuesday and dropped to $2\frac{1}{2}$ inches below the platform on Wednesday 19th March. During this period of three or four days additional labour was employed at the Pumping Station to mop up water leaking into the building, so that the pumps were not stopped.

At the same time the slacker in the Counter Drain at Dog-in-a-Doublet was shut. In spite of this Cross Guns Station was pumping with a very narrow margin of safety and to assist Dog-in-a-Doublet Station the Corporation Sewage Farm Pumps were started on Monday 17th March.

4. At Crowland there had been for a considerable time a fair quantity of water covered with ice on the High Wash, and the big gale on the night of Sunday 16th March caused some erosion by ice on the face of the bank between the Gravel Road and the West End. The Welland began to overflow the cradge bank over a very long length and the whole wash began to fill up rapidly. The water level was watched, and strengthening operations started on Monday, 17th March, on the bank in Crowland and were further extended over long lengths, notably between Decoy Farm Toll and Crowland, and Crowland and Cloot House on the succeeding Tuesday, Wednesday, Thursday and Friday, the bank having to be heightened by bags of soil. In many places and for considerable lengths these bags were holding a height of water at least two feet above the top of the bank. On Friday 21st March at approximately 12-15 p.m. a short length of the bank about $1\frac{1}{4}$ miles north of Crowland slipped and burst. A breach was quickly formed which widened to about 60 yards in width and the whole of the water contained in the Wash between Peakirk and

Spalding flowed out into the Postland District.

5. As many members of the Committee as were available met at the Drainage Office at approximately 2 p.m. the same day and it was decided—
 - (a) at all costs to control the flow of flood water so that the pumping Stations at Tydd and Cross Guns were not flooded out, and
 - (b) to confine the flood waters to as small an area as possible.

Accordingly measures were immediately put in hand to heighten with timbers the control sluices in Cox's Drain at Dowsdale and in St. James Drain at Falls Drove, where the sluice doors were both already down. In addition a dam of stone was deposited in the New South Eau approximately 150 yards east of the Durham Ox and subsequently the top of the doors in the New South Eau at Clows Cross were close boarded to prevent water flowing over the top. The top of the stone dam was lowered by our Dragline late on Saturday, 22nd March, to bring some measure of relief to Crowland village.

6. Action was simultaneously taken by the South Holland Drainage Trust to prevent the flood water flowing into their area, either over Queen's Bank or through culverts under the Railway line running from Postland to Spalding. The Thorney Drainage Board also shut and protected all its slackers draining into the New South Eau and a dam was put across the north end of Gold Dyke.
7. The flood water spread over the entire Postland district and was retained by Queen's Bank in the north, the Railway line in the east, and the Old South Eau Bank in the south. It then started flowing into the Borough Fen and Newborough

area down the Hundreds, Highland and Slipe Drains. On Tuesday, 25th March, the ends of these drains were blocked with stone dams.

8. On Friday, 21st March, the River Nene Catchment Board and their Engineer Mr. H. W. Clark offered to take over entirely the temporary sealing of the breach in the Crowland Bank and this offer was gratefully accepted. Throughout succeeding operations over the whole area the River Nene Catchment Board provided materials, plant and men freely.
9. Owing to interference from various sources with the dams at Dowsdale and Durham Ox, the water level in the New South Eau rose and water flowed over low places in the south bank into Morris Fen and by Tuesday, 25th March had spread to English Drove. All culverts under this drove had been blocked on Monday, 24th March. In addition all culverts and bridges under the Peterborough-Guyhirn road between a point three miles west of Thorney and Thorney Toll were blocked by the 25th March a gap being left in the dam across the New Wryde Drain at Thorney Toll so that flood water could be led to the Cross Guns Pumping Station via the Singlesole and Old Wryde Drains.
10. The timbers were taken off the top of the New South Eau doors at Clows Cross on Sunday, 23rd March, and with both paddle doors fully open and some water weiring over the top of one gate Tydd Pumping Station was receiving as much water as it could safely deal with (the level being between 1 and 2 feet below the concrete platform). The contributory districts, still lightly flooded with thaw water, were allowed restricted discharges of one or two hours per day.
11. A stone dam was placed in the Slipe Drain at Powder Blue on Monday, 24th March, and the

Powder Blue-Newborough Road and Speechley's Drove were both heavily sandbagged to prevent the flood waters from spreading further. Other culverts were also dammed off by the authorities of Newborough and Borough Fen. A considerable area of Newborough District, however, became covered with water during the course of the next few days, probably due in part to seepage of water through the barriers and in part to additional rain-water, which had no means of egress.

12. Work at the breach pushed steadily ahead, the River Nene Catchment Board using local labour, prisoner of war labour and on occasions labour transported specially from the Thorney and other areas. The main structure of the temporary barrier, formed partly of banks of deposited stone and partly of Buffalo tanks provided by North Midland Command, was completely early on Saturday, 29th March, eight days after the breach occurred. Waterproofing of this temporary barrier with tarpaulins, bags of earth, etc., was continued.
13. On the 29th, 30th and 31st of March a total fall of approximately 0.75 inches of rain was experienced. The amount of Welland water overflowing the cradge bank on to the Washes, which had eased off to some extent since 21st March but had never stopped, now started to increase considerably, and the level of water on the Washes rose rapidly. The result of this was that all effort at the breach had to be concentrated on strengthening and heightening the barrier with bags of soil.
14. Heavy gales and rainfall aggravated the spreading of the flood waters considerably, and on Tuesday, 1st April, extensive sandbagging operations had to be carried out along English Drove. In addition, the rainfall in its own area so raised the level of the

water at Cross Guns Pumping Station that the flow of flood water being taken there had to be reduced by partially shutting down the flow in the Old Wryde Drain. As a result of this a considerable area of the triangle of land between the Crowland and Bukehorn roads became flooded.

15. Mobile 10" and 12" pumps started being received from the Ministry of Agriculture on the 30th March, and two 12" pumps were installed at Gilberts Bar Toll-house, and were pumping water back into the High Wash by 31st March. The Lincolnshire N.F.S. set up a pumping site along the bank between Cloot House and Brotherhouse Bar, and were pumping on and after Thursday, 3rd April, their equipment being continually augmented with pumps from the Ministry. In addition, after negotiations at the end of March with the South Holland Drainage Trust, this authority kindly consented to discharge some of the flood waters through its own district, and widened an old drain and installed a new 3' 6" diameter culvert under Queen's Bank for this purpose. Considerable quantities of flood water were being discharged through this route by Friday, 4th April. All these efforts, combined with the water being taken away by Tydd and Cross Guns Pumping Stations, the latter pumping approximately 100% flood water after 8th April, had lowered the level of the flood waters considerably by Friday, 11th April.
16. In spite of the day and night work strengthening against the rising water level on the Wash, on Friday, 11th April, at 7-30 a.m., the temporary repair work at the breach gave way. The barrier had been holding a head of approximately seven feet of water and this proved too much for the sub-soil beneath the Buffalo tanks. The waters on the Washes, of an average depth of about 4 feet, discharged through the breach, extending the old scour

hole back into the bed of the New River. Arrangements were immediately put in hand by the River Nene Catchment Board to close the breach by driving steel sheet piling across the New River and placing more Buffalo tanks on the Wash side of the New River.

17. As the water level at Tydd Pumping Station was steadily dropping one door in the New South Eau at Clowes Cross was lifted about 1' 9" late on 11th April, and then a further 1' 6" on the following day. This had the effect of lowering the level of water in the New South Eau, and gave a better run-off for the flooded areas. This door was lifted clear of the water on Monday, 14th April, and the same day Postland District took the timbers off the top of the door in the St. James Drain, and also lifted the door slightly.
18. A temporary 6" water supply pipe-line was laid by an Army unit from the Peterborough Corporation supply at Powder Blue to the Tank Yard at Thorney, and completed and disinfected on Tuesday, 15th April. A cut was then made between the Thorney River and Teakettle Hall Drain at North Side, and the top flood water immediately north of Thorney thus led to the Dog-in-a-Doublet Pumping Station. Water from the flooded Pode Hole area was also pumped into the Thorney river.
19. On Monday, 21st April, the breach was declared sealed again, and pumping recommenced by the N.F.S. units at Brotherhouse Bar. In addition, French Drove Pumping Station, which still had 1 foot of water in it, was pumped out and started up, but it was discovered that the flow of water down the New South Eau under gravity was greater than the pumps could pump, so the Station was closed down temporarily. A slight obstruction by the stone

dam at Durham Ox was, however, removed by the Commissioners' dragline.

20. The Dredging and Construction Co. of King's Lynn were commissioned on 21st March to make a survey of the breach in the Crowland Bank and prepare a scheme for the permanent repair work. A scheme was put forward by them on 8th April, and an amended scheme considered and approved by the special executive committee of the North Level on the 21st April. The Dredging and Construction Co. took over all work at the breach from the River Nene Catchment Board on 24th April.
21. Pumping at French Drove Station was started again 29th April, and continued until 1st May, when the doors opened as a result of increased flow in the New South Eau. This was caused by further removal of the stone dam at Durham Ox, and removal of other dams in the Newborough and Borough Fen districts.
22. Most of the land in Thorney Fen and Crowland and Postland districts was cleared by 2nd May, and continuous pumping at Cross Guns Station ceased on 3rd May, as there was no longer sufficient water to warrant it. Pumping at Tydd Station was reduced to pumping on both tides each day with three engines from 6th May, and this programme is still being carried out, the water level never rising higher than five feet below the concrete platform.
23. It was possible to start pumping at French Drove Station on 8th May, and pumping is being continued to help draw the remaining water out of the Borough Fen and Newborough districts, the stone dams having to be continually lowered as the water level drops.
24. A scheme for the repair and improvement of the

whole barrier bank from Peakirk to Brotherhouse Bar is in course of preparation by the Dredging and Construction Co., Ltd. Borings and cross sections are being taken throughout this length of bank, and in this work the D. & C. C. are being employed in the first instance as consulting engineers.

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