COPY

C. J. D

3100

ESSEX RIVER BOARD.

River Stour. Sudbury Flood Prevention Works.

ENGINEER'S REPORT.

North-West Area
(Inland Waters)

Serial No. N.W.I.W.1.
CJD/MF

As a result of the floods of 1947 the River Stour (Essex and Suffolk) Catchment Board, in conjunction with the Ministry of Agriculture and Fisheries, gave an undertaking to Sudbury Corporation that a river improvement scheme would be prepared and executed to prevent a repetition of the serious flooding of low-lying parts of Sudbury.

The Catchment Board prepared a draft scheme and submitted to the Ministry, as part of the scheme, a proposal to construct a steel sheet pile and concrete weir to replace the derelict lock at Great Cornard on the River Stour, a mile or so downstream of Sudbury. This part of the scheme was approved in principle by the Ministry just prior to the formation of the River Board and a revised scheme received approval in September 1954 (Ministry Reference LDW 11800).

The report on this latter scheme foreshadowed further works of river channel and flood gate improvement. These works have been included in the complete scheme, which is now presented.

The scheme is designed primarily to prevent flooding in the Ballingdon area of Sudbury by reducing to some extent the flood level above Cornard Mill and by enlarging the river channel between Cornard and Ballingdon to reduce the flood gradient. Advantage is to be taken of the lower flood levels at Ballingdon to reduce the frequency of flooding of 200 acres of agricultural land at Brundon, by the construction of spillways and the improvement of relief channels.

Improvement of the drainage of the flood plain is not an object of the present scheme and, in fact, since the Sudbury Corporation and other local interests require a high level of retention in this section of the river, it would be impossible to effect any improvement in land drainage, other than the small reduction in normal water levels which will result from the scheme, without a major scheme of drainage of certain low-lying areas either through high ground to the river downstream of Cornard Weir or by pumping.

From the levels of the 1947 flood and dimensions of channel and flood plain it is estimated that the rate of flow was of the order of 3,400 cusecs. (30 cusecs./1,000 acres). The infrequent occurrence of such a discharge does not warrant the provision of a channel to carry the whole flow, but the channel improvement proposed will reduce the frequency of flooding of the flood plain and the depth of flooding during major floods.

No appreciable increase in the peak rate of discharge at points downstream is anticipated as a result of the diminution of flood storage due to the reduction in depth of flood water. It is estimated that with a discharge of 3,400 cusecs., although the increase during the rising flood might amount to 7½%, the peak flow

would be increased by less than 2%.

Further particulars of the proposed works are as follows:-

(i) The construction of an automatic float operated radial gate and a spillway at Cornard Mill in lieu of the weir previously proposed.

(ii) The improvement of the river channel between Cornard Mill and Ballingdon Bridge.

(iii) The improvement of the "Old River" channel from its junction with the river below Sudbury Mill to a new spillway at Brundon Hall Weir - to reduce flood levels above Sudbury Mill and so prevent the frequent flooding of the Brundon Hall area.

(iv) The construction of a spillway and relief channel above Brundon Mill to reduce flood levels in the river and so prevent the frequent flooding of low-lying land on the right bank due to overspill.

The radial gate at Cornard will be similar to the gate at Bures Mill, erected by the River Stour Catchment Board in 1938, except for modification of the control works to suit the difference in water levels.

The works at Cornard will, in order to preserve the local amenities, retain a summer water level only 3" below the level at present maintained but will, with the improved channel upstream, pass discharges as high as 1,700 cusecs. (15 cusecs./1,000 acres) without flooding between Cornard and Ballingdon. Greater discharges will make use of the flood plain but it is calculated that, with a flood discharge of 3,400 cusecs., the water level at Ballingdon would be approximately 3 ft. lower than in 1947, i.e. 6" below road level instead of 2' 6" above.

Upstream of Ballingdon the proposed new spillway and improvement of the "Old River" channel will increase the combined bank-full capacity of the existing river and the "Old River" to 10 cusecs./1,000 acres - approximately double the present capacity - so that flooding will probably not occur more than once during a normal winter.

The spillway above Brundon Mill serves a similar purpose drawing off approximately 5 cusecs./1,000 acres when the flood gates are discharging a similar amount. This will reduce the frequency of flooding of approximately 10 acres of agricultural land on either bank of the river due to the overtopping of the embankments. The land affected on the right bank includes some of the Brundon Hall farm buildings and ancient cottages near the ford downstream of the Mill.

Negotiations are proceeding with the various owners of land required for the works and working space and agreement in principle has already been obtained in most cases.

The work which it is estimated will cost £62,000 will be executed by direct labour. A detailed estimate accompanies this report.

The works proposed are shown on the following drawings:-

General Site Plan	ERB 55/3100/5A
Channel Sections	ERB 55/3100/8 to 15 inclusive
Structural Details	ERB 55/3100/17 to 21 inclusive.

(SGD) E.L. SNELL

Engineer.

17th June, 1955.