

Flood data :—

Asking that readings and data obtained by Public Works Department be submitted to Drainage Reference Board Engineer to check flood-discharge. Undertake to get an engineer at once if data supplied.

(ii.) Precis of Evidence given by Public Works Officials.

The evidence of the Public Works officials was to the effect that a flood of 29,000 cusecs was that estimated for the Ohinemuri River in 1910, and that on that basis the works were designed. They estimated the flow in the Waihou above the junction at 18,000 cusecs, though it was admitted that any definite measurement of this river was extremely difficult. The value of n in Kutter's formula had been determined at 0.037 by measurements of the slope, cross-section, and velocity as obtained by current-meter readings. In designing the works it had been assumed that a flood of half the maximum might occur in the Waihou simultaneously with the 29,000 cusecs flood recorded for the Ohinemuri. This gave 38,000 cusecs to be dealt with at Ngahina Bridge, and with the advent of Komata Creek 39,000 cusecs below its junction. The stop-banking was designed on the assumption that any dredging done in the river-bed would not be reckoned as available cross-section for flood-discharge. Originally a scheme was devised with levees approximately 1,000 ft. apart, and of a height and cross-section adequate to contain a flood-flow increasing from 38,000 at Ngahina Bridge to 40,000 at Hikutaia. Later, when the local residents ascertained the magnitude and character of the works, they asked that something less ambitious should be designed, and accordingly a scheme to deal with approximately 20,000 cusecs below Ngahina was formulated. No credit was taken, however, for the value of the dredged cross-section in the modified scheme. In other words, the cross-sectional area necessary to discharge 20,000 cusecs was computed above the existing river-bottom, except in one or two places where the channel is specially constricted. Information was also supplied as to the cost per cubic yard of the works which have been done up to the present.

APPENDIX B.

LETTER FROM MR. C. R. VICKERMAN, MEMBER OF WAIHOU AND OHINEMURI RIVERS COMMISSION, 1910.

SIR,—

6 Central Terrace, Kelburn, Wellington, 9th October, 1919.

In reply to your letter of the 8th October: The evidence submitted to the Commission of 1910 on Waihou and Ohinemuri Rivers *re* silting is to be found in C.-14 papers, and the exhibits were handed over at the time the Commission reported, which is now nine years ago. Mr. William Ferguson, of Wellington, was Chairman, and there were three other Commissioners, of whom I was one.

I do not know what became of the notes I took. However, the evidence submitted was not so much regarding the height of the floods as the damage done by the silt deposited, and the idea was to confine the river to a dredged-out and thus deepened channel, and to increase the speed so as to make it carry the finer ground tailings right out to sea, and so get rid of them, and at the same time prevent the valuable lands on the Waihou River or Thames Valley being damaged by further deposits of tailings.

As far as I remember, none of the engineers who gave evidence submitted cross-sectional areas with a view of determining the water that went down, but only to show how much the deposit of tailings had reduced these areas, and that is why in that stop-bank clause you refer to it was specially mentioned not less than 95 ft. clear from the old bank, before these deposits narrowed it.

If you refer to page 359 of evidence you will get Mr. F. R. W. Daw's measurements of the river he got in the Ohinemuri at Karangahake in 1904. (He was starting work at the Crown Battery then.) But that would not give you the height of the water in flood of 1910, when about 12 in. of rain fell at Waihi in about the same number of hours.

That Commission of 1910 had to take just what evidence was available from local people, as it only sat from 17th May to 10th June.

Neither river is very wide till after they junction, and then not till some distance down, the width being necessary more for the tidal than for the fresh waters. Till the silt began to settle in the Waihou below the junction, the action of steamers tendered to widen the channel; but about the time of the 1910 Commission the Ohinemuri had pretty well risen its bed to low-water level, and all the old deep holes—some 20 ft. deep or more—existing previously had been filled in, as well as the cross-section of the banks much added to; and the same began to take place in the Waihou and caused the outcry.

The great difficulty is that a big tide runs in right up to the junction, and if a north-to-west gale and spring tide occur with heavy rain you get an abnormal amount of water to contend with. That is why the Commission adopted 4 ft. high above the highest known flood level; of course, meaning to so raise the banks that the fresh flood-water would still continue running out at highest tides, which it does not do now.