

as the maximum likely to occur. The estimated extreme carrying-capacity of this channel at present, without the water overtopping the School Bridge (Hutcheson Street), is about 13,000 cubic feet per second.

In order to carry out the above recommendations it will be necessary to ease all sharp bends, remove all obstructions in the shape of willows, &c., remove some of the stop-banks farther back from the river, and also to materially increase their heights in places. This work also includes the straightening of the Wairau River at Maori Point and at the Peninsula.

(f.) Protective measures in the shape of groynes and other works where necessary to prevent erosion of the river-banks.

(g.) The Pukaka Main Drain should be cleared and enlarged if necessary, and stop-banked a sufficient height to prevent overflow. The stop-banks should be made to conform to the amended levels of the stop-banks on the main river.

(h.) The stop-banking of the sides of the Tuamarina River must be made to conform to the amended levels of the stop-banks on the main river.

(j.) Rose's flood overflow channel, at its intake or junction with the Opawa, should be rough-pitched or otherwise protected in the bottom and sides so as to prevent undue scouring and deepening of the channel at its intake, with the possible ultimate diversion of the whole of the Opawa down this channel.

(k.) As regards the present harbour entrance, we recommend that necessary works be carried out with a view to keeping the present straight-out channel as open as possible. This may be effected in some degree by a reasonable extension of the present wall.

REFERENCE No. 4.

To ascertain the nature and extent of any drainage-works that may be required, and the best method of carrying out such works.

Apart from the above-mentioned improvements to existing main drains, your Commissioners do not at present recommend the construction of any new drainage-works. Until complete surveys with accurate levels are made over the whole of the Pukaka district, it is impossible to say where, or to what extent, new drains are required or possible. We may, however, state our belief that, as regards drainage of the Tuamarina Valley, considerable improvement could be effected in view of the available fall in the lower end of the valley.

REFERENCE No. 5.

- (a.) *To furnish estimates of the cost of such remedial measures as you may recommend should be taken for the effective control and improvement of the said rivers and their banks ;*
- (b.) *To report in the case of each river what area or areas of land should be constituted a district in respect of which a rate may be levied to secure and pay the interest on and provide a fund for the repayment of any loan that may be raised to carry out any river-improvement works which you may recommend should be undertaken ;*
- (c.) *To report your opinion as to what matters, if any, should be adjusted by legislation ; and*
- (d.) *Generally, to report your opinion on all matters arising out of or touching the premises, including the question as to whether or not one or more competent authorities shall be appointed to control the whole or any portion or portions of the said rivers, and what statutory powers should be possessed by such authority.*

(a.) In the absence of complete surveys of the different river branches, showing all existing stop-banks and other works, with their levels, &c., it is impossible for your Commissioners to furnish an estimate of the cost of the remedial measures as herein outlined. But we may state that in our opinion the sum of £50,000 should cover the cost of such works as are necessary to give protection from all but abnormal floods. With a view to formulating a comprehensive scheme of works on the lines indicated by us, we recommend that the surveys should be completed forthwith so that an estimate of the cost may be made.