

POUKAWA LAKE DRAINAGE AREA (13,567 acres).

This work has again been in abeyance owing to the difficulty of coming to any satisfactory arrangements with the Native owners of the Poukawa Reserve.

The plant and buildings are in charge of a caretaker, who takes a daily reading of the rainfall and of the rise and fall in the Poukawa Lake level.

The plant consists of a pontoon, which is in good order and is ready when the machinery is available. The buildings comprise office, cookhouse, workmen's quarters, and toolhouse, all of which are also in good order.

The expenditure for the year was £92 7s. 6d.

HIKURANGI DRAINAGE AREA (50,000 acres).

This work was commenced at the beginning of June, 1919, the first work being the final definition of boundaries enclosing the proposed rating-area. After such had been carried out and agreed on at a meeting held at Hikurangi, where there were present the Chief Drainage Engineer, Messrs. Mander and Reed, M.P.s, and settlers concerned, the detailed engineering and land surveys requisite for the promulgation of the drainage scheme were put in hand. The area was proclaimed a drainage area in terms of the Swamp Drainage Act, 1915, on the 26th August, 1919.

The surveys included—(a) The location and engineering surveys for proposed Wairua River diversion; (b) land surveys in connection therewith; (c) location and engineering surveys for Wairua River spillways; (d) land surveys in connection therewith.

Work (a) was undertaken first, and on a preliminary investigation it was ascertained that the originally planned route of proposed diversion could possibly with advantage be varied by taking an alternative line which would be shorter in length, and at the same time simplify to a considerable extent the work of construction. Both lines were, however, carefully surveyed in order to institute a direct mathematical comparison, and with the result that on the basis of the scheduled prices originally used in the estimate of 1879 it was shown that a saving of some £7,300 could be effected by taking the alternative route. The engineering survey included the putting-down of about 450 borings to ascertain the rock depths along each proposed line.

Work (b), land surveys, was carried out in conjunction with the above, being properly based on adjacent available trig work.

On the completion of the diversion surveys, work (c) was taken in hand, and included the location and engineering survey of some nineteen spillways (or overflow channels), proposed to relieve the Wairua River in its tortuous channel in time of flood, and extending from the upper end of the proposed diversion to Whakapara, a distance of some 29½ miles by river. This by taking the line of spillways would be reduced by about ten miles.

In order to properly connect up the work continuous levels were run from the diversion right up the Wairua River to Whakapara, included all the spillways, and were properly checked to eliminate error. The proposed scheme has therefore been worked up in terms of one fixed datum, and direct comparisons can at once be made between any two points.

Work (d), land surveys, was carried out, together with the engineering surveys, for the purpose of taking, under the Act, what areas are required for the actual construction of the spillways, and the surveys themselves have been properly connected up with previous reliable work.

In addition the Wairua River from its commencement at the junction of Whakapara and Waiotu Streams to the proposed diversion-site (a distance of about 21½ miles) has been sounded to ascertain shallows, &c., and to enable a profile of the river to be plotted in terms of the fixed datum established. Two spillways which it is proposed to convert into actual river-diversions have been bored for rock depths. Flood and low summer levels of river have been established, and cross-sections of the river-bed taken at convenient points.

The plan work in connection with all these surveys was kept as far as possible forward during the progress of same, and from time to time provisional reports and estimates worked up for consideration.

Since the completion of the surveys, in January, 1920, the plan work, calculations, &c., have been pushed along with all despatch.

On its being decided to adopt the alternative line of diversion, the drawings, &c., in connection therewith were concentrated on, the engineering portion being prepared with a view of letting this portion of the work by contract. At the end of March of this year the position was that these were approaching completion, the plans of spillways had been completed, also longitudinal sections of 21½ miles of Wairua River, and the requisite land plans, comprising four 30 in. by 30 in. sheets.

Further sketches of what is proposed have also from time to time been prepared to illustrate reports, in which the technical details in connection with the scheme have been outlined.

The total expenditure for the year was £826 14s. 3d., of which wages absorbed £605 2s. 10d.

The local officer in charge is Mr. E. C. Robinson, who has zealously carried out his duties.

GENERAL.

The acquisition of further machinery having been decided on by the Hon. Minister of Lands, I am about to proceed to America for purpose of selecting the most up-to-date plants obtainable. Plants for all works will be purchased, and the result should be a more rapid development of all the areas now under review.

I have, &c.,

J. B. THOMPSON,

Chief Drainage Engineer.

The Under-Secretary for Lands, Wellington.