

1919.  
NEW ZEALAND.

DEPARTMENT OF LANDS AND SURVEY:

SWAMP DRAINAGE.

REPORT FOR THE YEAR ENDED 31st MARCH, 1919, TOGETHER WITH STATEMENT  
OF ACCOUNTS.

*Presented to both Houses of the General Assembly pursuant to Section 13 of the Swamp Drainage  
Act, 1915.*

SIR,—

Department of Lands and Survey, Wellington, 14th July, 1919.

In pursuance of section 13 of the Swamp Drainage Act, 1915, I forward herewith the report of the Chief Drainage Engineer upon the operations carried out under the above Act for the past year, together with a statement of accounts and balance-sheet.

I have, &c.,

T. N. BRODRICK, Under-Secretary.

The Hon. D. H. Guthrie, Minister of Lands.

REPORT BY CHIEF DRAINAGE ENGINEER.

SIR,—

I have the honour to submit annual reports on the three areas proclaimed under the Swamp Drainage Act, 1915. No new areas have been proclaimed during the past year, but some are under consideration.

KAITAIA DRAINAGE AREA (39,665 ACRES).

The outstanding features of the year have been the comparatively mild winter, the small number of floods, and the exceptionally fine summer. The rainfall for the year recorded by the gauge at Kaitaia was 47.30 in., the greatest fall for one month being 9.06 in., during October. With only slight interruptions it was possible to work throughout the winter by hand-labour, although team-work had to be abandoned for three months. However, speaking generally, a very fine year's work has been done and great advantage taken of the good summer.

The early portion of the year saw much difficulty in securing first-class labour, and men could not be obtained from any quarter. It was hoped, however, that this would be overcome by the placing of a number of Jugo-Slavs on the work. Unfortunately, these men have not turned out as great a success as was expected, and there has been continued friction since their arrival. It is well known that they are expert spademen, but by adopting frequent go-slow tactics the cost of their work has been somewhat higher than a similar class of work done by European gangs. At date of writing, however, a very marked improvement is noticeable. At the beginning of the summer quite a number of British workers (including several returned soldiers) were obtained and good gangs made up.

The work is divided into the various divisions as follows:—

*Kaitaia River Diversions.*—The year began with three spillways completed and one partly completed. These spillways have been pushed ahead, and I now have to report twenty-one completed. Of these some four have been done by Slav labour, two by British gangs, and the remainder by wheel scoops. Those cut by hand-labour are made through low swampy country unable to be worked by teams, or short cuts and points too small for team-work. On the other hand, as the teamsters became accustomed to their work several cuts considered almost unworkable have been carried through entirely by teams. Slavs have been employed trimming batters after all possible team-work had been done. Some 53,500 cubic yards have been removed from the cuts during the year.

*Kaitaia River-bank Work.*—The whole river from Awanui to the dredge-site has been widened out to its new section, and lined out in advance of the dredge to an average depth of 4 ft. This work entailed cutting points and straightening the river-channel, and was carried out by Slavs and a British gang by means of wheelbarrows, scoops, &c. About 48,500 cubic yards have been removed in this work. On several occasions it was possible to put scoops on, but bullock teams were soon found to be too unwieldy, and latterly horse teams have worked on points and long "slices."

The new river from the dredge-site to Awanui Landing is 9 miles 30 chains, shortening the old course by 3 miles 60 chains. The good effect of the widening has been greatly felt during the heavy freshes, but the greater number of the cuts have not so far been "christened," thanks to the low rivers of the past three months.

*River-clearing.*—During the winter teams were employed clearing snags, timber, &c., along the banks and on diversions, and now very little remains to be done below Kaitaia.

*Pukepoto Drains.*—A large amount of draining has been carried out during the year. The work has been done in a first-class manner and at a very reasonable price. All work has been done by day labour, no contractors being forthcoming in the district. A total length of 12 miles 60 chains of drains has been constructed, consisting of 728 chains of boundary and outfall drains, and 292 chains of double road-drains. Of the 728 chains of boundary and outfall drains 406 chains have been cleaned and widened, and 50 chains of swamp road have been formed up. The total amount of earth shifted from drains during the year is about 45,600 cubic yards. Much wet work has been possible during the low state of the lake, and most of the outfalls have been brought up to permit adequate reception of water from higher levels.

*Whangatane Spillway.*—Three cuts have been completed on this side, and two others are well in hand. Of these five, three have been let on contract. The work lies in heavy clay, the price given for contract being 1s. 3d. per cubic yard. It is anticipated that several more cuts will be completed during the winter. 10,860 cubic yards have been removed during the year. These cuts will be deepened by dredge later on.

*Surveys, &c.*—The traverse of Whangatane spillway, which was begun late last year, was completed, levelled, and cross-sectioned, and cuts laid out. Land plans for taking the lower portions were begun, but owing to pressure of other work have not been completed. Some 13 miles of new drains have been laid out, and a start made late in the year with the subdivision of the Crown land which is to be made available for discharged soldiers.

*Summary for Year.*—Total yardage, 158,460 cubic yards; length of drains, 12 miles 60 chains; road-drains, 3 miles 52 chains; roads formed, 50 chains.

*Cost of Work.*—The cost per cubic yard of river-work has varied greatly, there having been such great variety of earths to deal with. Heavy clay has cost 1s. 2d. to 1s. 5d. per cubic yard, while alluvial soil has been shifted for 10d. per cubic yard. In the drains similar variety has been found. Small drains have been put in for 9d. per cubic yard (in peat) to 1s. 3d. per cubic yard, in heavy timber. On large, deep drains where double handling has been necessary the cost has naturally been greater, working out from 11d. in good country to 1s. 6d. in clay and heavy timber.

Next season should see the greater portion of the day labour and work completed.

*Works Expenditure for the Year.*—The total expenditure for the year was £17,613 15s. 5d., including wages, supplies, hire of horse and bullock teams, and general expenses. Of this amount the sum of £15,023 8s. 1d. was paid out of Imprest Account for wages, war bonus, &c. The principal payments were—Day labour, £11,428 7s. 7d.; hire of teams, £1,531 0s. 9d.; piecework contracts, £360 14s. 1d.

*Proposed Works.*—The principal works to be carried out during next financial year are as follows: (1) Dredging of Kaitaia-Awanui River and spillways; (2) excavation of Whangatane channel; (3) dredging of Waiho channel; (4) general roading of area and construction of outfall and arterial drains; (5) development of 4,000 acres of Crown land.

*General.*—At end of period there was still no appearance of the dredging machinery ordered from England, and now two years overdue. Latest advices are to the effect that shipment may be expected within a few months' time.

Arrangements are being made to procure another dredger for the Whangatane channel work, and timber is being cut for construction of the hull.

Mr. R. J. Cornwell is in local charge of operations, and has very ably and zealously carried out his duties.

Vouchers, &c., are prepared in the Auckland Office, where the books in connection with works are kept.

#### POUKAWA LAKE DRAINAGE AREA (13,567 ACRES).

The works have again been in abeyance owing to the dredge ordered from England not yet having arrived. There is every possibility that the dredge may come to hand in the near future now that the war is over and the position in England has become easier. Another factor in holding up the works has been the difficulty in coming to arrangements with the Native owners of the Poukawa Reserve. Up to date only a small portion of the area has been acquired, and until suitable arrangements can be made with the owners of the balance it is not desirable to go on with the works. The plant and buildings are in charge of a caretaker, who also takes a daily reading of the rainfall and also of the rise and fall in the Poukawa Lake level. The rainfall for the past twelve months was 25.55 in.

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

The total expenditure for the year was £101 9s., of which amount £95 4s. was for wages.

#### WAIHI DRAINAGE AREA (22,720 ACRES).

With the exception of cleaning and dragging the Wairere Stream the work on the Waihi Swamp has been confined to dredging.

The dredge completed a cut up the Pongakawa Stream as far as the old junction of the Kaikokopu old bed, then returned to the estuary. It is at present engaged in dredging up the Wairere Stream, and will be so occupied for some considerable period. The dredge is now in charge of Mr. J. Colebrook, who has had considerable experience with the Department and also with this class of dredge, and progress for the future should be much more rapid. The bottom of present cut consists of a hard sandy conglomerate which is extremely difficult to dredge, consequently progress is much slower than in peaty country; but, notwithstanding this, progress has been fairly satisfactory, and should continue so in the future. The total number of cubic yards of spoil shifted during the period was 20,780, at a total cost of £664 15s. 2d., averaging



