

1930.  
NEW ZEALAND.

DEPARTMENT OF LANDS AND SURVEY.  
DRAINAGE OPERATIONS IN HAURAKI PLAINS.

REPORT FOR THE YEAR ENDED 31st MARCH, 1930, TOGETHER WITH STATEMENT  
OF ACCOUNTS.

*Presented to both Houses of the General Assembly pursuant to Section 20 of the Hauraki Plains Act, 1926.*

SIR,—

Department of Lands and Survey, Wellington, 1st July, 1930.

I have the honour to present herewith the report of the Chief Drainage Engineer on operations carried out during the past year on the Hauraki Plains in accordance with the provisions of the Hauraki Plains Act, 1926.

I have, &c.,

J. B. THOMPSON,

The Hon. E. A. Ransom, Minister of Lands.

Under-Secretary for Lands.

REPORT OF CHIEF DRAINAGE ENGINEER.

SIR,—

I have the honour to submit the twenty-second annual report on the land reclamation and development works carried out on the Hauraki Plains during the financial year ending 31st March, 1930.

It has been an active year of construction by the Department, and a period of exceptional production by the settlers on the reclaimed area. Increased dairy-production from the district has been more than proportionate to the Dominion's record production for the season. Though this satisfactory position is mainly due to the well-maintained condition of the pastures, as the result of a mild winter and well-distributed summer rainfall, there is no doubt that increased productive capacity has been created by farm-development, increased used acreage, and drainage-improvement. Produce returns are furnished hereunder and for comparative purposes the returns for previous year are given in parentheses :—

					Tons.	Estimated Value. £
Butter produced	..	..	..	..	2,584 (2,405)	382,054
Cheese produced	..	..	..	..	1,686 (1,331)	129,160
Fibre and tow	..	..	..	..	969 (1,000)	23,200
Estimated value of stock sold	..	..	..	..	..	60,762 (61,100)
						<u>£595,176</u>

Freights, including metal, 31,971 (11,426) tons.

A fact of importance in the general development of the district is the opening of part of the Kerepehi Block for selection. Eleven sections, comprising 820 acres, were disposed of during the year, and an area of 1,371 acres subdivided into twenty-three sections is being offered for selection in May, 1930, under conditions which promise good prospects for the successful applicants.

The construction works of the Department continue to be closely interwoven with local-government activities. Several works on which the Government is assisting financially are being carried out by the Department, at the request of the local bodies concerned, and during the year control of the area in the Elstow Drainage District lying to the east of the Awaiti Canal has been handed over to the Elstow Drainage Board.

During the summer destructive swamp fires again caused heavy loss of flax and further economic waste in expenditure by the Department and flax-millers in fire-fighting. The reduction of the fire menace is the first essential to the utilization of river-bank lands where flax is now growing naturally and other lands which are unsuitable for ordinary settlement, and it cannot be too strongly urged that consideration be given to the question of fire-prevention, particularly in the direction of the formation of fire districts as suggested in previous annual reports.

Following the example of previous years, extra work has been undertaken for the relief of unemployment. This year an endeavour has been made to increase the volume of construction in order to provide more employment, and as a result much useful work has been accomplished.

During 1929 rain fell at Kerepeehi on 155 days, and the total fall for the year was 41·05 in. The average fall at Kerepeehi over a period of fourteen years (1916–29) is 44·56 in., average number of days with rain being 153. Total rainfall figures at three stations are available for 1929 from records kindly supplied by voluntary observers—viz., Kopuarahi, 42·67 in. ; Kaihere, 48·90 in. ; Waitakaruru, 46·74 in. The following schedule has been compiled from the Kerepeehi rainfall records:—

RECORDS OF DAILY PRECIPITATION, KEREPEEHI, HAURAKI PLAINS.

Year.	Number of Days, with given Daily Precipitation in Inches.													Total Days.	Total Fall.	Wettest Month.	Driest Month.
	0·00 to 0·49.	0·50 to 0·74.	0·75 to 0·99.	1·00 to 1·24.	1·25 to 1·49.	1·50 to 1·74.	1·75 to 1·99.	2·00 to 2·49.	2·50 to 2·99.	3·00 to 3·99.	4·00 to 4·99.	5·00 to 5·99.	6·00 to 7·00.				
1916 ..	109	12	9	7	2	3	..	1	..	..	1	..	..	144	52·19	Nov.	6·65
1917 ..	131	11	4	4	3	..	1	1	1	..	..	..	..	156	45·61	Feb.	6·26
1918 ..	145	14	6	4	..	1	..	..	1	..	..	..	..	171	44·06	Oct.	7·47
1919 ..	122	9	1	3	2	..	..	..	..	..	..	..	..	137	27·36	July	4·52
1920 ..	85	7	10	3	1	1	3	2	..	..	..	..	..	112	43·16	Feb.	6·10
1921 ..	93	12	5	3	2	..	..	1	..	..	..	..	..	116	34·41	Oct.	5·89
1922 ..	101	17	9	3	..	1	1	..	1	..	..	..	..	133	42·81	Feb.	6·62
1923 ..	151	6	5	4	..	1	1	..	..	..	..	..	1	169	47·04	April	9·76
1924 ..	132	8	10	5	2	5	1	1	..	2	..	..	..	166	60·37	April	8·55
1925 ..	142	15	4	2	..	..	..	1	..	..	..	..	..	164	37·64	June	6·67
1926 ..	149	15	6	4	5	2	2	..	..	..	..	..	..	183	55·53	May	8·86
1927 ..	159	10	6	5	..	4	..	..	..	..	..	..	..	184	45·33	July	6·29
1928 ..	125	7	9	2	3	2	2	1	..	..	..	..	..	151	47·30	May	7·52
1929 ..	124	19	8	3	1	..	..	..	..	..	..	..	..	155	41·05	April	5·09
1930* ..	17	1	2	2	2	..	..	1	..	..	..	..	..	25	11·84	Jan.	6·87

\* First three months of year only.

Average annual rainfall over fourteen years is 44·56 in.

The reclamation works and general construction operations briefly reviewed below represent a stage in the policy of progressive development which is the aim of the Department. Road construction and metalling has been a prominent feature in the year's activities, and good progress has been made with flood-control and drainage-works.

#### DREDGES.

The dredging operations carried out on the Piako River over a period of years are having a marked effect on the river regime. The improved tidal propagation due to channel enlargement is a great assistance to land-drainage. Minor floods that formerly would have been severely felt on the low-lying lands now pass to the Gulf practically unnoticed, and each year there has been considerable increase in the length of stopbank raised to final level. The river-improvement works have now reached a stage when some channel-enlargement above Kaihere Landing can be carried out without risk to the river-bank lands down stream from this point. One dredge commenced work during the year on the reach between the Waikaka Canal and Patetonga Landing and two dredges have been operating below Kaihere Landing.

As the required width of the improved river-channel in the lower reaches is too great for bank delivery with the type of excavator on the works, No. 19 land dredge has been converted from dipper excavator to drag-line with 105 ft. boom. This necessitated extensive structural alterations, including special provision for moving the plant—which now weighs over 40 tons—over marshy ground. Now that some initial difficulties have been overcome the performance of this machine appears to be satisfactory and economical, and the plant will be the means of saving a considerable amount of rehandling of excavated material.

A useful addition was made to the excavating-plant during the year in the form of a light drag-line excavator weighing about 10 tons, to be used for the construction and reconditioning of drainage ditches of medium size. The boom length is 25 ft. and bucket-capacity 10 cubic feet.

The excavating equipment handled 595,565 cubic yards of material during the year at an average cost of 6·25d. per cubic yard. The following table gives the total quantities excavated by the dredges during the past ten years :—

Year.	Cubic Yards.	Cost per Cubic Yard.
1920-21 .. .. .	158,865	7·42d.
1921-22 .. .. .	246,022	7·29d.
1922-23 .. .. .	440,092	8·20d.
1923-24 .. .. .	508,654	7·27d.
1924-25 .. .. .	822,286	5·86d.
1925-26 .. .. .	856,653	6·32d.
1926-27 .. .. .	647,182	7·42d.
1927-28 .. .. .	652,413	7·32d.
1928-29 .. .. .	619,911	6·54d.
1929-30 .. .. .	595,565	6·25d.

No. 1 Priestman dredge worked during the month of May, 1929, on the Awaite Canal, and early in June was transferred to Auckland on loan to the Public Works Department. For this purpose the dredge had to be taken through the Awaite Canal bridge, necessitating the removal and replacement of the central span. The plant returned from Auckland in November, and after overhaul commenced work in the Piako River above Kaihere, where it has been practically continuously employed. While on the Hauraki Plains Works the dredge excavated 13,156 cubic yards. The unit cost was 14·17d., but this figure includes interest and depreciation for one year though the actual working-time was 96½ days.

No. 2 Priestman dredge, working in the Maukoro Canal, completed the primary cut to the Torehape Road by June, 1929. The dredge was then turned, and by January, 1930, had worked back to the upper dam, deepening the canal for a distance of two miles and three-quarters. The peat along this reach varies between 17 ft. and 24 ft. in depth, and, as there has so far been very little bank caving, further deepening of the canal is being attempted with a view to winning sufficient clay for ballasting temporary roads on each side of the canal. The drainage provided by the canal will bring about the consolidation and decay of the peat. When sufficient clay can be won from the canal for the formation of development roads and the land can be used for grazing, the process of bringing this large peat area into a state of production will be considerably hastened. The dredge output for the year was 69,367 cubic yards, and unit cost 6·06d.

No. 6 Priestman dredge was employed pulling willow-stumps on the eastern side of the Piako River below Ngatea in April, and deepening the channel in the same locality in May, 1929. During June, July, and part of August the plant was laid up for repairs to hull and machinery. When recommissioned the dredge commenced deepening the river-channel between Kaihere and Kerepeehi, but was idle for a period of about four weeks in January and February, when the crew was temporarily transferred to No. 11 dredge in the Awaite Canal. The total excavation for the year was 10,144 cubic yards, and the cost per cubic yard 25·80d. This exceptionally high unit cost is accounted for by the fact that hard material was encountered on the river-bottom, and it includes all charges while dredge was idle and engaged on removal of willow trees and stumps.

No. 11 Kingston dredge was engaged during the period April to August, 1929, deepening the Awaite Canal and widening and deepening the Intercepting Canal. In August the crew was transferred to No. 6 dredge, and this plant has been idle, with the exception of four weeks' work in the Awaite Canal in January and February. The total excavation was 27,228 cubic yards, and the cost, including interest and depreciation during time dredge was idle, was 11·29d. per cubic yard.

No. 15 Bucyrus drag-line excavator was employed during the first ten months of the year building the stop-bank on the northern side of the Elstow Canal for the protection of the area known as the Kerepeehi Block. This machine had to work on exceptionally wet and boggy country, and the fact that two shifts were able to work practically without interruption during winter and summer is a tribute to the skill and resourcefulness of the operators and the adaptability of this type of machine. In February last the machine was shipped to the Intercepting Canal, where it will be used to further raise the stop-bank on the northern bank of the canal. This has been a particularly troublesome section of embankment, owing to the poor bearing value of the foundation on which it must be built, and the gradual raising of the bank is the only feasible method of building it to the required height. Throughout the year the dredge was operating with 50 ft. boom and ½ cubic yard bucket. The total output was 143,558 cubic yards, and the cost per cubic yard 5·28d.

No. 16 Bucyrus drag-line excavator has worked two shifts continuously, building stop-bank on the western side of the Awaite Canal between peg 2 miles 30 chains and 5 miles 70 chains. No difficulty was experienced in completing the bank in one operation to peg 4 miles 40 chains, but from this point, owing to the occurrence of slips, the embankment had to be reduced to half required height. No difficulty is anticipated, however, in raising the partially constructed section of embankment after allowing for consolidation. Using a bucket of ½ cubic yard capacity, this machine handled 110,053 cubic yards of material, at cost of 6·79d. per cubic yard.

No. 19 Michigan dredge, which has not been in use on these works since it was loaned to the Public Works Department in December, 1926, has been recommissioned after extensive alterations. The machine is now equipped with 60 h.p. gasoline engine, new superstructure, and long-reach boom which gives a working radius of 100 ft., using 1 cubic yard bucket. The plant is now being used for widening and deepening the Piako River upstream from the 6 mile peg. The required top width of the

improved channel is 170 ft., the underwater bank slopes three horizontal to one vertical, and where the quantity of excavation is large a clear berm of 40 ft. to 50 ft. is required to prevent bank caving under weight of spoil delivered on river-bank. To meet these conditions the bulk of the material has to be excavated and transported 200 ft., and the machine is designed to do this in one operation. The machine has worked ninety-six days, and during that time has excavated 18,489 cubic yards at cost of 14·82d. per cubic yard, but for part of this period the machine was working without some essential equipment, as alterations had not been completed. During the last two months of the year when working-conditions were normal the output was 11,198 cubic yards and unit cost 9·70d.

No. 24 steam dipper dredge, after completing the Waitoa Canal in the Tahuna district, was early in April, 1929, towed down the Waitoa and Piako Rivers and across the Hauraki Gulf to Waitakaruru and commenced the construction of the Pouarua Canal. This canal discharges into the Maukoro Canal, and follows the boundary of the Hauraki West Drainage Board District. For the passage of the dredge up the Maukoro Canal it was necessary to remove one span of the main highway bridge at Waitakaruru and disconnect the water-supply mains. When commencing work on the new canal the dredge could only work at high water until a temporary dam was constructed to maintain stable water-level. Trouble with boiler delayed progress of dredge, and in February it had to be laid up while six rows of boiler-stays were renewed. This delay was unfortunate, as it was essential to reach a suitable place for the construction of another temporary dam and lower water-level in the completed canal before the winter, and with this end in view two shifts worked during March. The dredge advanced 4 miles 65 chains during the year and excavated 201·631 cubic yards at unit cost of 4·47d.

No. 28 Bay City drag-line excavator is the new light machine previously mentioned. It was received and erected on the works in March and worked eighteen days reconditioning a large drain on the Kerepeehi Block. Making allowance for the fact that the machine was new the output of 1,930 cubic yards at cost of 8·85d. per cubic yard is very satisfactory, and it is apparent that for service on light construction where heavier machine could not be profitably used this plant will fill a long-felt want. This machine was purchased with equipment for both drag-line and shovel work, and consequently there are innumerable uses to which it can be utilized on the Department's works. It is provided with caterpillars and McCormick-Deering tractor engine, and can develop a speed up to four miles per hour on suitable country. If this machine has to be transferred to other works, as is anticipated, then it can be loaded on to a railway truck, the only dismantling required being the removal of the jib.

#### CENTRAL DISTRICT.

The formation and metalling of 3 miles 30 chains of the Ngatea-Kaihere Road commenced in December, 1928, and was completed in October, 1929. A through metal surface was provided before last winter, but, owing to bad weather in May, the work had to be discontinued for four months.

The work carried out during this financial year comprised 32 chains of formation and 1 mile 33 chains of metalling, requiring 3,519½ cubic yards of metal, which was unloaded from scows at convenient points along the river-bank and carted with the Department's teams. 2 miles 7½ chains of the Kerepeehi-Kaihere Road was resurfaced during September and October, 1,146 cubic yards of surfacing-metal being used, and the road was graded and rolled for its entire length. The Hopai Road was reconstructed for a distance of 71 chains westward from the Ngatea-Pihiroa Road intersection. The original roadway, 33 ft. wide, has been widened to 66 ft., a new drain constructed on the northern side and existing drain on southern side widened. Several culverts were extended and water-supply main lowered preparatory to metalling.

Eleven sections in the Kerepeehi Block have been disposed of and twenty-three sections are being offered for selection in May, 1930. It was decided to metal a further 3 miles 57 chains of road in this block to give access to these sections. The work was commenced in October, supplies of broken metal being obtained by scows, and at the end of the period under review some 3,940 cubic yards of metal had been received and base course laid for a distance of 2 miles 54 chains. 2 miles 14 chains of the Awaiti Canal Western Embankment Road was re-formed and also 1 mile 33 chains of the Makumaku Road.

The camp established during the previous year near the Kaihere Ferry for men engaged on relief works for unemployed was reopened in June, and about twenty men employed until September planting 319 acres with flax, of which some 242,800 plants were used. With the area planted during the previous year the total area of flax-plantations is now 887 acres. About 700 acres of this area is alluvial swamp and on this land the planted flax is flourishing, but on the balance of the area, which is peat, results so far are not so satisfactory. Further unemployment relief works were undertaken in October, and about thirty men, with headquarters at the Kaihere Camp, have been engaged on drain-construction and other works in this neighbourhood. A considerable amount of drain-construction and other work has been carried out near Ngatea and Horahia in connection with the river-widening. 14 miles 11 chains of drains were cleared in this district, 32,998 cubic yards excavated by manual labour in the construction of 11 miles 31 chains of new drains, and 17,987 cubic yards excavated in widening and improving 7 miles 9 chains of drains. A new flood-gate was constructed at Rawerawe and also one at Kerepeehi. Sheet piling is being driven across the outlet of the two-barrel flood-gate at Pipiroa to stop seepage under foundations, and all outlet structures have received periodical attention.

Minor undertakings in this district include ring-barking of willows on the river-banks; spraying blackberries on and adjoining the flax-plantations; raising stop-bank on the Waikoura Stream with wheel scoop, and fencing this embankment; cutting fascines for roadwork; and cutting, hauling, and transporting by barge white-pine logs required for piles, earthwork, and general construction.

The depot at Kerepeehi is the centre at which all fuel, stores, and construction material are received and despatched to the various works by launches and motor-lorry.

The vehicular river-ferry service across the Piako River at Kaihere has been maintained throughout the year, the income from ferry fees being very little more than is required to balance expenditure.

## PATETONGA DISTRICT.

The principal work in this district has been the metalling and reconstruction of the Patetonga Main Road which was commenced in March, 1929. Work was continued up to May, 1929, at which date the base course of metal had been laid to the Patetonga Township, completing the gap in the metalled road between Patetonga and Morrinsville. The road required a certain amount of attention during the winter and in October, 1929, metalling was resumed and steady progress was maintained throughout the summer. The fairly heavy reconstruction work on the hill section of this road was commenced in November and base-course metal had been laid from Patetonga to junction with the existing metal surface at Kaihere by the 11th April, 1930, thus providing an all-weather road-connection between Patetonga and Ngatea. During the year 6,566 cubic yards of metal was received. Base course was laid for a distance of 5 miles 38 chains, and road was completed with surface course for a distance of 1 mile 39 chains. Some 2 miles 23 chains of hill-road reconstruction has been completed; 1 mile 57 chains of swamp-road re-formation; 8,828 cubic yards of clay has been carted for ballasting peat-swamp road and haunching metal. Alterations, repairs, and renewals of several bridges and culverts on roads being metalled and service roads were carried out. These included one new 4-ft.-diameter and a 2 ft.-6-in.-diameter concrete-pipe culvert, extension of several 2 ft.- and 1 ft.-6-in.-diameter pipe culverts, and the laying of 300 ft. of 9 in. storm-water drains. A 2-ft.-diameter pipe culvert was constructed on the Mangawhero Road and 341½ cubic yards of gravel removed from this road drain was supplied to the County Council for road-surfacing.

The tramway service between Patetonga Wharf and Township, which has been maintained by the Department since 1918, will be discontinued early this year. With the improved access to the district by road the tramway has ceased to be a necessity, and the freight offering does not warrant continuance of the service. 37 miles 77 chains of drains in this district were cleaned during the year, 3,403 cubic yards excavated in widening and deepening 2 miles 56 chains of drains, and 30 chains of fencing erected at Tahuna to complete the fencing of the Waitoa Canal.

## WAITAKARURU—TOREHAPE DISTRICT.

An unemployed-relief work-camp to accommodate thirty men was established at Torehape, and much useful subsidiary drainage-work carried out which will aid the development of the peat lands in this locality. 7 miles 19 chains of new drain construction involved the excavation of 17,793 cubic yards, and 25,401 cubic yards was excavated in widening and deepening 17 miles 34 chains of existing drains. Also 30 miles 31 chains of drains were cleaned. Two rolled steel-joist access bridges of 30 ft. span with piled abutments were constructed across the Pouarua Canal and a large three-barrel reinforced-concrete flood-gate having a waterway area of 48 square feet, was constructed at the outlet of this canal. A new 4-ft.-diameter culvert and flood-gate was provided on the western side of the Maukoro Canal.

Minor work connected with dredging operations in the Maukoro and Pouarua Canals include the construction of temporary dams for regulating water-level in canals; construction of temporary bridge for traffic-deviation while span of main-highway bridge was being dismantled for passage of dredge; and formation of 10 chains of service road.

## AWAITI DISTRICT.

Progress with the Elstow-Awaiti Main Drainage scheme is indicated by the handing-over to the Elstow Drainage Board at the 31st March, 1930, of the control of 17 miles 5 chains of drains constructed and hitherto maintained by the Department in the area lying to the north of the Intercepting Canal. Two dredges have been employed continuously and one intermittently on the Elstow, Awaiti, and Intercepting Canals and embankments. Progress would be more rapid but for the fact that unless built to the required height in two or more operations the embankments sink into their mud foundation.

The upper 2 miles 8 chains of the main outlet drain for the Central Subdivision of the Elstow Drainage District was widened and a 20-ft.-span road-bridge constructed across this drain on the Tirohia-Otway Road. Further widening of drain will be undertaken as the swamp consolidates, but the work already done will provide a much-needed outlet for a large area.

A total of 6,945 cubic yards was excavated in 2 miles 17 chains of new drain-construction, 4,755 cubic yards in widening and deepening 2 miles 32 chains, and 8 miles 41 chains of drains were cleaned. The Awaiti West Road was roughly formed as a service road for a distance of 31 chains, and 94 chains of fencing was erected for protection of drains and embankments.

## BUILDINGS, BRIDGES, WHARVES, AND DRAINAGE STRUCTURES.

New structural work was practically confined to bridges, culverts, and outfall structures, particulars of which are contained in summary at the end of the report.

## SUMMARY.

The total length of the subsidiary drains constructed in connection with the Hauraki Plains drainage-works is now 710 miles. The principal works carried out during the year under review are summarized in the following schedule :—

	Length. Miles. ch.	Excavation. Cub. yd.
Drains cleaned by manual labour .. .. .	97 0	..
Drains widened and deepened by manual labour .. .. .	29 51	51,546
Drains (new construction) by manual labour .. .. .	21 67	57,736
Stop-bank repairs by manual labour .. .. .	0 5	800
Total quantity of drainage excavation by manual labour .. .. .	..	110,082
New canals constructed by machines .. .. .	5 32	233,311
River and canal improvement, machine construction .. .. .	9 35	362,254
Total quantity excavated by machines .. .. .	..	595,565
Stop-banks constructed or partially constructed in conjunction with river-improvements and canal-construction .. .. .	7 10	..
Roads metalled .. .. .	2 72	4,388
Roads metalled, base course only .. .. .	8 12	9,637
Roads resurfaced with metal .. .. .	2 8	1,146
Total quantity of road metal laid .. .. .	..	15,171
Roads reconstructed and improved .. .. .	8 70	..
Roads graded .. .. .	0 50	..
Clay carted for ballasting peat roads and haunching metal .. .. .	..	8,828
Fences erected .. .. .	2 74	..
Levels taken for road and drainage work .. .. .	62 00	..
Traverses taken for road and drainage work .. .. .	15 40	..
Area cleared of scrub .. .. .	..	63
Area planted in flax .. .. .	..	319
Road-bridges constructed .. .. .	..	No. 3
Road-culverts constructed .. .. .	..	4
Flood-gates constructed, single-barrel 4-ft.-diameter pipe .. .. .	..	3
Flood-gates constructed, reinforced concrete 3-4 ft. by 4 ft. barrels .. .. .	..	1
Cross-sections of roads, river-channel, and canals .. .. .	..	377

## FLAX LEASES.

The area leased for flax-growing purposes is 3,173 acres in nine holdings. The annual rental totals £439 8s. 6d., and rentals totalling £488 19s. 6d. were paid during the year.

## GRAZING-AREAS.

The area leased for grazing purposes under temporary tenancies is 9,143 acres, held by 49 settlers, on which the annual rental totals £601 7s. Rental actually collected totalled £552 14s. 3d.

## FUTURE PROPOSALS.

The principal future constructional activities will be confined to the completion of the works now in hand, viz :—

- (1) Piako River improvements and flood-prevention.
- (2) Road construction and metalling.
- (3) Completion of Elstow-Awaiti flood-protection scheme.
- (4) Continuation Waitakaruru-Maukoro and Pouarua Canals.
- (5) Development of peat area lying to the west of Pouarua Canal.

## WORKS EXPENDITURE.

The total expenditure recorded was £48,673 10s. 10d., of which day-labour absorbed £17,104 11s. 10d., and 119 piecwork and co-operative contracts accounted for £5,437 3s. 11d.

The drainage rate struck for 1929-30 totalled £3,977 2s. 2d., entailing the issuing of 434 rate notices.

The sum of £12,163 11s. 3d. was collected during the period under review, of which £4,672 2s. 2d. was in respect of drainage rates.

## GENERAL.

The field and office staff has experienced a busy year, as the special work undertaken for the relief of unemployment caused a great deal of extra work, and I desire to place on record my appreciation of the manner in which all concerned carried out their respective duties.

I have, &c.,

R. G. MACMORRAN,

Chief Drainage Engineer.

The Under-Secretary for Lands, Wellington.

### HAURAKI PLAINS SETTLEMENT ACCOUNT.

RECEIPTS AND PAYMENTS ACCOUNT FOR THE YEAR ENDED 31ST MARCH, 1930.

[illegible]

## REVENUE ACCOUNT FOR THE YEAR ENDED 31ST MARCH, 1930.

<i>Dr</i>		£	s.	d.	<i>Cr.</i>		£	s.	d.
To Interest on debentures issued under Hauraki Plains Settlement Act, 1926	..	32,173	17	7	By Rates .. .. .	..	4,085	19	8
Interest on expenditure from Public Works Fund .. .. .	..	202	16	0	Accrued rent .. .. .	..	8,436	6	0
Administration expenses .. .. .	..	453	15	2	Accrued royalties .. .. .	..	494	16	0
Maintenance of completed works .. .. .	..	2,976	10	7	Grazing fees .. .. .	..	133	1	4
Remissions of rent and interest .. .. .	..	917	7	8					
Remissions by Dominion Revaluation Board .. .. .	..	72	1	6	Tram freight and ferry fares	768	0	0	
Remissions of rates .. .. .	..	183	2	1	Less half profits Kaihere Ferry to County Council .. .. .	16	13	7	
Rebates—									751 6 5
Rent and interest .. .. .	£ s. d.	605	4	1	Interest on investments .. .. .	..	682	12	9
Rates .. .. .	22 11 8				Interest on sales of land .. .. .	..	283	13	4
		627	15	9	Interest allowed on sinking-fund contributions	..	338	6	0
Irrecoverable rent, &c., .. .. .	..	297	10	11	Miscellaneous .. .. .	..	657	19	9
Expenses raising loans .. .. .	..	15	0	0	Net loss carried down .. .. .	..	22,055	16	0
		£37,919	17	3			£37,919	17	3
		£	s.	d.			£	s.	d.
To Net loss brought down .. .. .	..	22,055	16	0	By Balance carried forward .. .. .	..	101,921	6	10
Balance from previous years .. .. .	..	79,865	10	10					
		£101,921	6	10			£101,921	6	10

## BALANCE-SHEET AS AT 31ST MARCH, 1930.

<i>Liabilities.</i>					<i>Assets.</i>				
	£	s.	d.	£	s.	d.	£	s.	d.
Capital Account—									
Debentures issued under Hauraki									
Plains Act, 1926 .. ..	785,000	0	0						
Expenditure from Public Works									
Fund .. ..	5,070	0	0						
Value of Crown land set apart									
under the Act .. ..	45,000	0	0						
				835,070	0	0			
Discharged Soldiers Settlement Account (merged									
interests under section 20, Discharged Soldiers									
Settlement Amendment Act, 1923) .. ..				475	10	5			
Consolidated Fund—	£	s.	d.						
Interest on debentures under									
Local Bodies Loans Act, 1908	22,083	6	8						
Interest on expenditure out of									
Public Works Fund .. ..	4,461	12	0						
Interest on temporary transfers									
from other accounts .. ..	589	0	11						
Rates unpaid, 1917-21 .. ..	47	15	0						
Interest on debentures under									
Hauraki Plains Act, 1926 .. ..	78,271	1	8						
				105,452	16	3			
Interest on debentures, accrued but not due .. ..				5,634	15	7			
Sundry creditors—	£	s.	d.						
Interest on debentures .. ..	489	10	11						
Departmental .. ..	82	17	6						
Miscellaneous .. ..	5,484	0	9						
				6,056	9	2			
Rents charged in advance .. ..				2,312	0	0			
Suspense Account .. ..				13	19	5			
Writings-off in suspense .. ..				130	18	8			
Payments in advance—									
Rent .. ..	86	17	4						
Interest on deferred-payment									
sales .. ..	28	0	2						
Rates .. ..	0	3	2						
Miscellaneous .. ..	3	12	6						
				118	13	2			
				£955,265	2	8			
Improved land handed over to									
Land Board for settlement—	£	s.	d.	£	s.	d.			
Leased .. ..	164,739	17	2						
Unleased .. ..	13,667	11	2						
				178,407	8	4			
Unpaid purchase price of land sold on deferred									
payment .. ..				6,066	13	9			
Unimproved lands not yet disposed of .. ..				44,375	5	1			
Improvements on adjoining Crown lands .. ..				7,710	0	0			
Permanent reserves .. ..				8,851	0	0			
Works in progress—Expenditure on land in process									
of reclamation, including formation and									
metalling of roads .. ..				491,076	18	2			
Artesian wells—	£	s.	d.						
Crown tenants, Hauraki Plains	750	14	8						
Permanent reserves and Crown									
lands .. ..	216	10	9						
							967	5	5
Buildings .. ..				6,106	0	0			
Wharves .. ..				4,557	10	0			
Machinery and Plant .. ..				51,296	13	10			
Live-stock .. ..				111	4	0			
Loose tools .. ..				359	5	8			
Stores and fuel .. ..				5,449	4	8			
Stamps on hand .. ..				0	3	0			
Sundry debtors	£	s.	d.						
Rent .. ..	1,977	19	8						
Rates .. ..	4,053	17	11						
Instalments of principal on									
deferred payment sales .. ..	156	11	3						
Interest on deferred-payment									
sales .. ..	157	3	4						
Interest on investments .. ..	116	7	8						
Interest on well-boring .. ..	122	4	5						
Law costs .. ..	83	18	7						
Tram freights .. ..	183	16	9						
Royalties .. ..	148	3	9						
Grazing fees .. ..	111	15	0						
Departmental .. ..	1,592	19	7						
Miscellaneous .. ..	5,270	8	2						
				13,975	6	1			
Postponed rent .. ..				325	17	9			
Losses in suspense .. ..				130	18	8			
Interest accrued but not due on sales of land .. ..				65	0	0			
Investment in Public Debt Redemption Fund .. ..				8,795	16	6			
Revenue Account—Balance forward .. ..				101,921	6	10			
Cash in transit from Post Office .. ..				463	15	9			
Cash in Public Account .. ..				24,252	9	2			
				£955,265	2	8			

J. B. THOMPSON, Under-Secretary for Lands.  
J. H. O'DONNELL, Controller of Accounts.

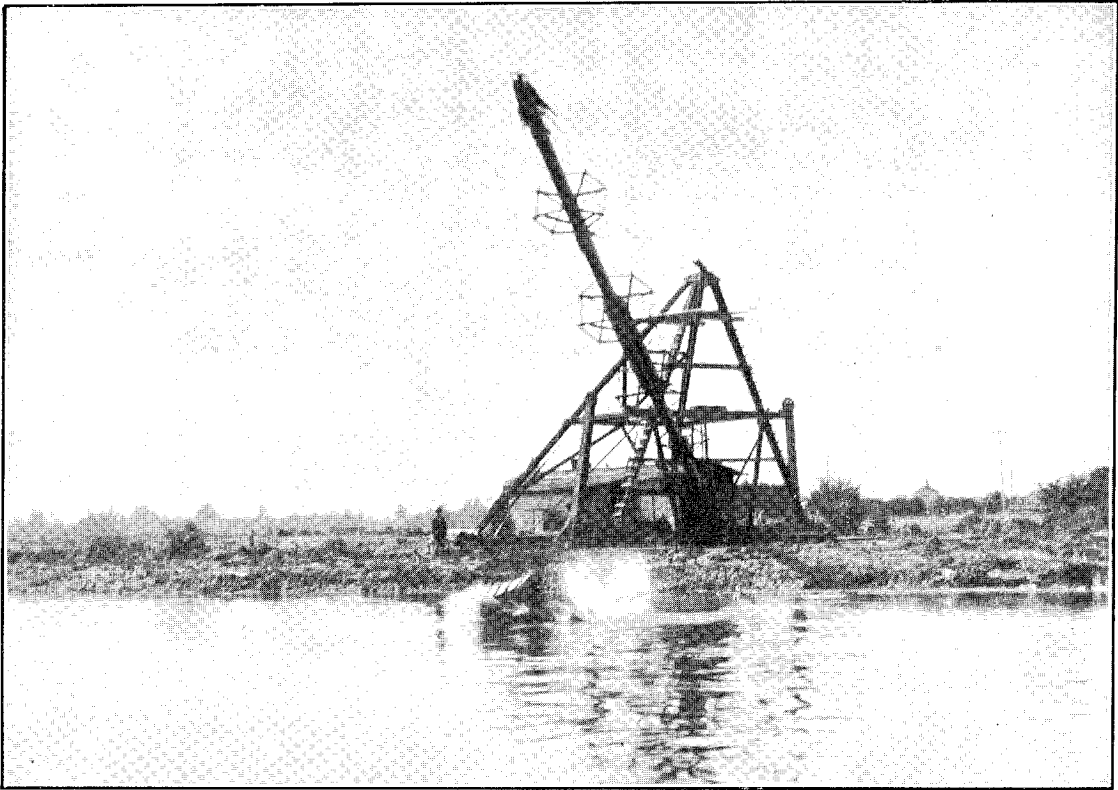
I hereby certify that the Receipts and Payments and Revenue Account and Balance-sheet have been duly examined and compared with the relative books and documents submitted for audit, and correctly state the position as disclosed thereby. The following comments are appended: (1) In the opinion of the Audit Office interest charged on works in progress should be capitalized. (2) A Bad Debts Reserve should be created. (3) Suggestions in reference to the treatment of expenditure on lands already handed over for settlement were made to and are at present under consideration by the Department.—J. H. FOWLER, Deputy Controller and Auditor-General.

*Approximate Cost of Paper.*—Preparation, not given; printing (675 copies, including illustrations and map), £45.

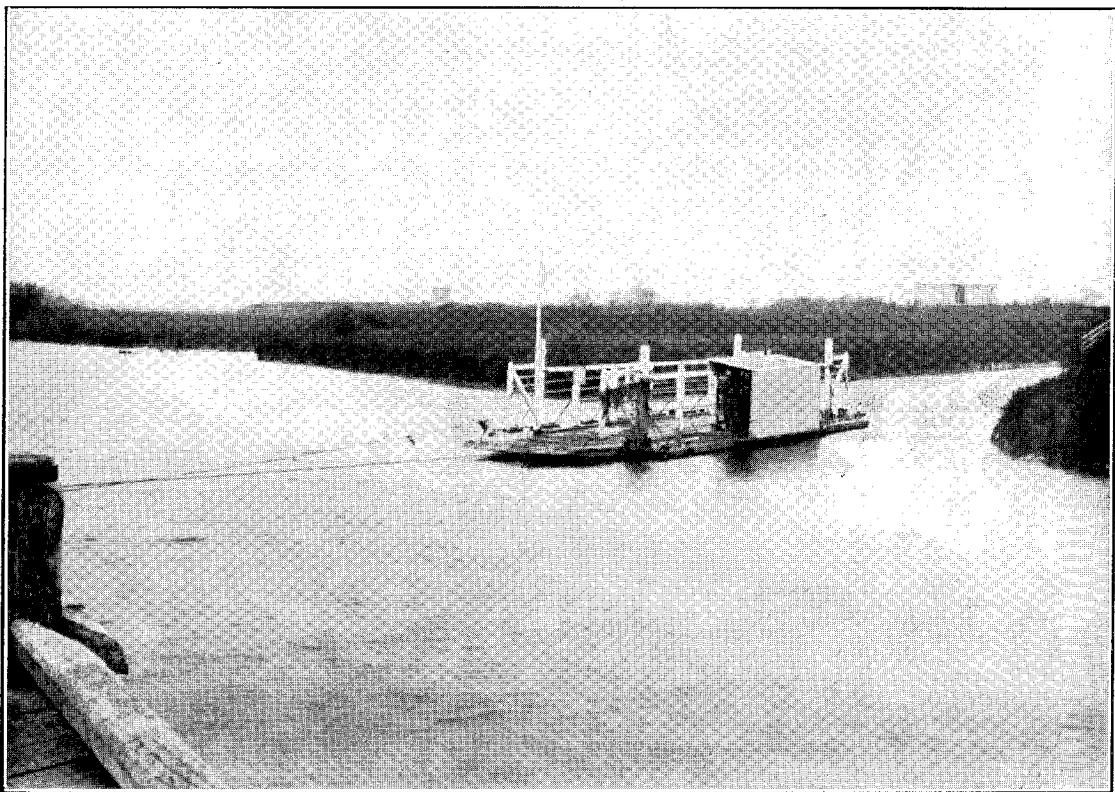
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Price 1s. 6d].





NO. 19 DREDGE (PIAKO RIVER IMPROVEMENT).



KAIHERE FERRY.



## F I R T H   O F   T H A M E S

