

1933.  
NEW ZEALAND.

---

## DEPARTMENT OF LANDS AND SURVEY.

## SWAMP DRAINAGE.

REPORT FOR THE YEAR ENDED 31ST MARCH, 1933, TOGETHER WITH STATEMENTS OF ACCOUNTS.

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

Department of Lands and Survey,  
Wellington, 1st August, 1933.

SIR,—

In pursuance of section 13 of the Swamp Drainage Act, 1915, I have the honour to forward the report of the Chief Drainage Engineer covering operations on lands proclaimed under the Swamp Drainage Act and amendments.

I have, &c.,  
W. ROBERTSON,  
Under-Secretary for Lands.

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

## REPORT OF CHIEF DRAINAGE ENGINEER.

SIR,—

I have the honour to submit my annual report on the areas proclaimed under the Swamp Drainage Act, 1915, and its amendments.

## KAITAIA DRAINAGE AREA (61,430 ACRES), MANGONUI COUNTY.

Maintenance of completed drains, stop-banks, and flood-gates comprised the principal work carried out in this area during the year, as, apart from maintenance, only a few small jobs were undertaken.

*General.*—The principal industry in the area affected by drainage operations is the production of butter. Returns covering a period of years are given hereunder:—

Year ending 30th June,	Tons.
1915 .. .. .	148
1920 .. .. .	213
1925 .. .. .	503
1930 .. .. .	1,120
1932 .. .. .	1,422
1933 .. .. .	1,750

(Close estimate).

These figures include production from a wide area of adjacent hill country, not directly affected by our drainage operations, which produces over 50 per cent. of the total.

Improvement of herds and pastures by testing and top-dressing has been carried out extensively during the past eight or ten years, and accounts for a large increase, but much of the flat land now used for dairying was previously undrained and subject to floods.

The provision of drainage facilities and the comparative immunity from flooding as a result of the extensive flood-control works completed in recent years has given an incentive to practise approved methods of aiding production with the certainty of procuring results.

It is generally admitted that the Kaitaia Flats would be capable of much greater production with the adoption of more intensive farming and improved methods. Underdraining has not been practised to any extent, and many more subdivisional drains are needed to take full advantage of the outlets already provided. There are also large areas in rough pasture or at a low stage of development. Diminished returns and the difficulty of obtaining capital has doubtless arrested or hampered development, but in many cases larger areas are held than could be developed to the best advantage in normal times. Smaller areas are desirable both for facilitating production and lightening the individual liability.

*Rainfall, &c.*—Rainfall and river-gauge readings have been recorded regularly throughout the year. The total monthly rainfall and highest and lowest river-gauge readings for each month have been recorded as set out on schedule hereunder:—

RAINFALL AND RIVER-GAUGE READINGS AT KAITAIA FOR YEAR ENDED 31ST MARCH, 1933.

Month.	Rainfall (Inches).	Wet Days.	Highest Rainfall for Twenty-four Hours.		Kaitaia River- gauge Readings.	
			Inches.	Day.	Highest.	Lowest.
1932.						
April .. .. .	6.05	12	2.15	9th	64.5	52.4
May .. .. .	3.19	14	0.64	22nd	59.3	54.0
June .. .. .	3.08	12	0.90	16th	62.0	53.7
July .. .. .	3.30	14	1.21	9th	60.0	54.0
August .. .. .	3.85	12	1.24	14th	65.4	54.0
September .. .. .	3.18	15	1.02	14th	62.2	53.3
October .. .. .	2.95	14	0.75	16th	58.6	52.6
November .. .. .	0.38	7	0.23	5th	55.0	52.3
December .. .. .	2.93	13	1.66	23rd	60.0	52.3
1933.						
January .. .. .	1.05	6	0.38	6th	54.0	52.2
February .. .. .	6.35	14	3.88	28th	62.5	52.1
March .. .. .	1.62	11	0.67	21st	58.1	52.1
Totals .. .. .	37.93	144				

Flood-levels have also been taken throughout the area on several occasions and connected to datum.

The rainfall for this year, 37.93 in., is the lowest recorded for many years, and is the third successive year of abnormally low rainfall. No flooding occurred, and there was no overflow from the Kaitaia River on to the low country. As the river has been confined to its banks for the past three years, it appears the Kaitaia flats are now immune from flooding, except during abnormal rainfall such as may be expected to occur at long intervals; but it must be borne in mind that the three-year period mentioned has been one of very low rainfall, and that higher flood-levels will probably be recorded even with the average yearly rainfall, and that some overflow may occur in seasons wetter than the average.

*Whangatane Spillway.*—This channel was in operation on fourteen occasions during the year for periods of from twelve to forty-eight hours. The maximum amount of water carried was approximately 3,000 cusecs; but it is apparent a much greater volume could be safely passed by the channel, also that the regulating weir at intake will effectually prevent any overtaxing of the spillway in the lower reaches.

The only work carried out on the spillway was the placing of a fascine mat below the concrete apron of the regulating weir to prevent scour by flood-waters.

*School Cut.*—This cut now forms the permanent channel for the Kaitaia River, and as the old channel is rapidly filling with silt and shingle, some fencing of properties was entailed. Fifteen chains of fencing was erected, together with one swing gate across the old channel.

*Drains.*—58 m. 25 ch. of drain was cleared of weeds and siltage. This work was carried out by contract, public tenders being called.

*Stop-banks.*—Thirteen miles of stop-banks, with fifty-four flood-gate outlets, were regularly inspected. Some patching of stop-banks was carried out, and attention given to flood-gates to maintain efficient operation.

*General.*—Attention was given to the maintenance of plant laid up on the area. Pontoons of floating plants have fallen into a bad state of repair, necessitating regular pumping, and exposed ironwork on all machines was chipped and painted to prevent deterioration by rusting.

*Proposals for Ensuing Year.*—Maintenance of existing drains and stop-banks is the only work proposed for the ensuing year.

*Works Expenditure.*—The total expenditure for the year was £990 4s. 6d., being confined practically to maintenance of existing drains.

*Drainage Rates.*—The rates struck amounted to £3,883 14s., entailing some 577 rate notices. £1,612 19s. 8d. was actually collected.

#### HIKURANGI DRAINAGE AREA (50,000 ACRES), WHANGAREI COUNTY.

*Rainfall.*—The rainfall through the year, though heavy at times, has on one occasion only caused fairly serious flooding of the swamp area. The year's total recorded at the Apotu gauge was 53·65 in., and rain fell on 148 days.

*Floods.*—The maximum stage recorded at the Jordan Bridge was 31 ft. on the 30th April, and earlier in the same month a stage of 29·4 ft. was reached. The high stages did not remain long on either occasion.

*Data.*—Data of precipitation of water, stages, &c., has been collected continuously at various stations, and the whole of this data has been plotted in graph form.

The three Gurly automatic stage recorders are now located at (1) Purua Bridge, (2) Lewis' Bridge, (3) near junction of Whakapara and Waiotū Streams.

*Construction Work.*—Construction work through the year has been almost wholly on improvements to the lower reaches of the river.

#### *Excavator Work.—Wairua River.*

*Main Diversions and Spillways.*—No work was carried out during the period.

*River-improvement.*—No. 12 Bucyrus carried out excavation of the rubble and silt bar immediately below No. 8 diversion, and has also improved the narrow portion of the channel for some 10 chains above No. 7 diversion and from 4 m. 35 ch. to 5 m. 5 ch.

No. 3 Priestman snagged the river and improved the channel from 1 m. 65 ch. to 40 ch.

No. 14 Bucyrus excavated over rock bars which needed drilling and blasting, from No. 1 diversion down to 1 m. 55 ch. and from G-H diversion up to 1 m. 44 ch.

#### *Hand Work.*

*River-improvement.*—Early in the year a contractor snagged the river over a length of 40 chains below Jordan.

*No. 5 Diversion.*—The deep cut-off drain, back-filled over stone and timber, was completed.

*No. 8 Diversion.*—Work was in hand to lower the grade of the cut-off drain behind the land-side spoil-bank, but was abandoned on the temporary closing of works.

*Maintenance.*—Cleaning of the Mangawhero improvement is in hand by No. 5 Scheme workers from Hikurangi.

#### *Plant and Machinery.*

*Bucyrus Plant.*—Nos. 12 and 14 excavators only have been working as drag-lines on river-improvement. The wear-and-tear has been excessive in respect to buckets and ropes used in grappling with timber and rock under water.

*No. 13 Bucyrus.*—This excavator is parked at Apotu.

*No. 26 Dipper.*—This excavator has been dismantled, the house re-erected at Apotu, and machinery, &c., stored therein.

*No. 3 Priestman.*—Late in the year this excavator was dismantled and all gear reasonably handled with our own lorry transported to Apotu for storage. The pontoon remains moored in the river and will probably be used later for transport of drag-lines.

*Drilling and Compressor Plant.*—This was not used through the year, and remains stored at Apotu.

*Locomotives, Trucks, &c.*—No use has been made of this plant. One locomotive has been transferred to Hauraki Plains.

*Truck and Cars.*—One 30 cwt. truck and two cars have been in use through the year.

*Workshops.*—These have been staffed, as occasion has demanded, to facilitate bucket and machinery repairs, &c.

#### *Other Works.*

*Survey Work.*—Levels, cross-sections, &c., have been taken as required.

*Relief Works.*—Since November an average number of twenty-one No. 5 Scheme men from Hikurangi have been absorbed. The work has been in major improvements to the lower reaches of the old Mangawhero Stream and in cleaning the Mangawhero Stream improvement.

*Proposals for Coming Year.*—A limited programme of excavator work for improvement from Rapids to Lewis' Bridge is proposed. Hand work will be confined to works authorized for No. 5 Scheme workers, and in cleaning and maintenance where required.

*Rating and Classification.*—Towards the end of the financial year two classifiers were appointed for purpose of classifying all the lands in the drainage area for rating purposes. The field work has been completed and the necessary formalities for striking rates are under way.

*Works Expenditure.*—The expenditure for the year totalled £4,063 8s. 3d.

## WAIHI DRAINAGE AREA (20,000 ACRES), TAURANGA COUNTY.

Work in this area was confined entirely to maintenance of existing works. The main canals have remained in good order since the last redredging, and it is anticipated that with a certain amount of hand maintenance the employment of machinery will not be necessary for several years.

All hand drains in the area were cleaned during the year, the greater number being done by competitive contracts, and repairs to flood-gates and stop-banks were carried out as required. The length of hand drains cleaned was 37 m. 36 chs.

There is a good growth of millable flax on the areas east of the Wharere and Pongakawa Canals, but milling has been at a standstill owing to the depressed state of the market. The flax lease areas west of the Wharere were surrendered by the lessees, and areas totalling 330 acres were disposed of. The balance of the area amounting to 930 acres is being drained preparatory to development as grazing lands.

A single men's relief camp for twenty men has been set up, and good work had been done up to the end of the period under review.

Total expenditure for the year was £667 4s. 7d.

Drainage rates were struck totalling £2,073 16s. 10d., and £697 15s. 8d. was collected.

## POUKAWA DRAINAGE AREA (13,567 ACRES), HAWKE'S BAY COUNTY.

Late in the year an unemployed relief camp of twelve men was established in order to undertake the work of cleaning and deepening the dredged cut. At the end of the year 30 chains had been cleared and 15 chains deepened. The work of classifying the area for rating purposes under the provisions of the Swamp Drainage Act was duly carried out, and after appeals had been dealt with the rate was struck late in the year, totalling £1,369 1s. Expenditure totalled £197 4s.

I have, &c.,

R. G. MACMORRAN,

Chief Drainage Engineer.

The Under-Secretary for Lands, Wellington.

## SWAMP LAND DRAINAGE ACCOUNT.

RATE ACCOUNTS FOR THE YEAR ENDED 31ST MARCH, 1933.

## KAITAIA DRAINAGE AREA.

*Special Rate Accounts : Capital.*

<i>Dr.</i>	Rural Subdivision.		Town Subdivision.		<i>Cr.</i>	Rural Subdivision.		Town Subdivision.	
	£	s. d.	£	s. d.		£	s. d.	£	s. d.
To Transfer to Sinking Fund ..	330	15 0	45	4 1	By Balance .. ..	270	1 10	44	6 1
Interest charge .. ..	2,169	5 0	405	15 11	Rates levied .. ..	3,361	17 0	391	1 9
Rates written off .. ..	4	14 7	..	..	Less rebate .. ..	799	18 8	..	..
Remissions .. ..	194	14 1	28	3 3					
Balance .. ..	329	13 0	..	..		2,561	18 4		
					Penalty, 10 per cent. .. ..	197	1 6	20	11 5
					Balance .. ..	..	..	23	4 0
	<u>£3,029</u>	<u>1 8</u>	<u>£479</u>	<u>3 3</u>		<u>£3,029</u>	<u>1 8</u>	<u>£479</u>	<u>3 3</u>

*General Rate Accounts : Maintenance.*

<i>Dr.</i>	Rural Subdivision.		Town Subdivision.		<i>Cr.</i>	Rural Subdivision.		Town Subdivision.	
	£	s. d.	£	s. d.		£	s. d.	£	s. d.
To Cost of maintenance (less subsidy)	889	6 5	98	16 3	By Balance .. ..	519	9 5	63	17 4
Remissions .. ..	70	8 4	6	4 8	Rates levied (less subsidy) .. ..	840	4 11	90	11 0
Rates written off .. ..	1	10 9	..	..	Penalty, 10 per cent. .. ..	58	18 1	4	12 9
Balance .. ..	457	6 11	54	0 2					
	<u>£1,418</u>	<u>12 5</u>	<u>£159</u>	<u>1 1</u>		<u>£1,418</u>	<u>12 5</u>	<u>£159</u>	<u>1 1</u>

NOTE.—Gross maintenance costs (£1,302 13s. 8d.) were subsidized from Consolidated Fund by £413 7s. 3d.

## WAIHI DRAINAGE AREA.

*Special Rate Accounts : Capital.*

<i>Dr.</i>	Pukehina Ward.		Kaikokopu Ward.		<i>Cr.</i>	Pukehina Ward.		Kaikokopu Ward.	
	£	s. d.	£	s. d.		£	s. d.	£	s. d.
To Balance .. ..	..	..	54	19 7	By Balance .. ..	334	3 7	..	..
Transfer to Sinking Fund .. ..	28	18 10	43	8 3	Rates levied .. ..	411	10 2	417	3 10
Interest charge .. ..	246	1 2	369	1 9	Balance .. ..	..	..	50	5 9
Balance .. ..	470	13 9	..	..					
	<u>£745</u>	<u>13 9</u>	<u>£467</u>	<u>9 7</u>		<u>£745</u>	<u>13 9</u>	<u>£467</u>	<u>9 7</u>

*General Rate Account : Maintenance.*

<i>Dr.</i>	Pukehina Ward.		Kaikokopu Ward.		Central Ward.		<i>Cr.</i>	Pukehina Ward.		Kaikokopu Ward.		Central Ward.	
	£	s. d.	£	s. d.	£	s. d.		£	s. d.	£	s. d.	£	s. d.
To Balance .. ..	..	..	..	..	83	17 11	By Balance .. ..	296	2 9	342	3 3	..	..
Cost of maintenance .. ..	58	10 0	285	11 7	389	2 6	Rates levied .. ..	298	17 6	434	12 10	706	12 4
Rates written off .. ..	..	..	..	..	170	17 6							
Balance .. ..	536	10 3	491	4 6	62	14 5							
	<u>£595</u>	<u>0 3</u>	<u>£776</u>	<u>16 1</u>	<u>£706</u>	<u>12 4</u>		<u>£595</u>	<u>0 3</u>	<u>£776</u>	<u>16 1</u>	<u>£706</u>	<u>12 4</u>

## POUKAWA DRAINAGE AREA.

*Special Rate Account : Capital.*

<i>Dr.</i>	£		s. d.		<i>Cr.</i>	£		s. d.	
	£	s. d.	£	s. d.		£	s. d.	£	s. d.
To Transfer to Sinking Fund .. ..	..	..	107	15 0	By Rates levied .. ..	..	..	1,233	3 10
Interest charge .. ..	..	..	1,077	10 0					
Balance .. ..	..	..	47	18 10					
			<u>£1,233</u>	<u>3 10</u>				<u>£1,233</u>	<u>3 10</u>

*General Rate Account : Maintenance.*

<i>Dr.</i>	£		s. d.		<i>Cr.</i>	£		s. d.	
	£	s. d.	£	s. d.		£	s. d.	£	s. d.
To Balance .. ..	..	..	135	17 2	By Rates levied .. ..	..	..	135	17 2
			<u>£135</u>	<u>17 2</u>				<u>£135</u>	<u>17 2</u>

SWAMP LAND DRAINAGE ACCOUNT—*continued.*

## RECEIPTS AND PAYMENTS ACCOUNT FOR THE YEAR ENDED 31ST MARCH, 1933.

<i>Receipts.</i>			<i>Payments.</i>		
	Public Works Fund.	Consolidated Fund.		Public Works Fund.	Consolidated Fund.
	£ s. d.	£ s. d.		£ s. d.	£ s. d.
To Balance transferred from Swamp Land Drainage Account ..	9,008	19 1	By Kaitaia Drainage Area—		
Rents from national-endowment land in Waihi Drainage Area..	..	375 1 9	Drainage works, &c. ..	232	17 9
Special rate for interest and Sinking Fund—			Management and engineering expenses .. ..	21	2 0
Drainage area—				253	19 9
Waihi .. ..	..	179 3 6	Maintenance, completed works	..	728 4 8
Kaitaia .. ..	..	1,054 17 4	Waihi Drainage Area—		
Poukawa .. ..	..	291 1 0	Drainage works, &c. ..	24	0 8
		1,525 1 10	Management and engineering expenses .. ..	10	2 3
General rate for administration and maintenance—				34	2 11
Drainage area—			Maintenance completed works	..	662 14 1
Waihi .. ..	..	518 12 2	Poukawa Drainage Area—		
Kaitaia .. ..	..	557 14 10	Drainage works, &c. ..	115	9 3
Poukawa .. ..	..	31 19 2	Management and engineering expenses .. ..	57	0 4
		1,108 6 2		172	9 7
Subsidy from Consolidated Fund: Maintenance, Kaitaia Drainage Area .. ..	..	413 7 3	Hikurangi Drainage Area—		
Thirds .. ..	..	186 16 11	Drainage works, &c. ..	2,711	1 4
Sundry rents .. ..	..	82 6 10	Management and engineering expenses .. ..	571	17 4
Plant .. ..	16 13 0	..		3,282	18 8
Miscellaneous .. ..	60 9 7	17 13 7	Fuel and stores .. ..	805	11 3
Transfer expenditure to Treasury Adjustment Account .. ..	..	1,390 18 9	Cost, raising loans .. ..	67	13 0
Transfer, expenditure to Public Works Fund .. ..	4,600	2 2	Transfer receipts to Treasury Adjustment Account .. ..	..	3,708 14 4
			Transfer, receipts to Public Works Fund .. ..	9,069	8 8
				13,686	3 10
				5,099	13 1
				13,686	3 10
				5,099	13 1
				13,686	3 10
				5,099	13 1



